Descriptive Catalogue

OF THE

Obstetrical and Gynæcological Instruments

IN THE

Museum of the Royal College of Surgeons of England

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Privately Printed.

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OF THE

Obstetrical Instruments

IN THE

Museum of the Royal College of Surgeons of England

Including the Loan Collection, formerly constituting the Museum of the Obstetrical Society of London, now deposited in the Museum of the College by the Royal Society of Medicine

PART I.

COMPILED BY

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Fellow of the College

1921

ROYAL COLLEGE OF SURGEONS OF ENGLAND

OBSTETRICS, Instruments and Apparatus

PREFACE.

THE description of instruments in this series belonging to the Loan Collection of the Royal Society of Medicine is founded on the "Catalogue of and Report of Obstetrical and Other Instruments exhibited at the Conversazione of the Obstetrical Society of London, held, by permission, at the Royal College of Physicians, March 28th, 1866"; it is referred to in this Catalogue as "Cat. Obstet. Soc., 1866." That catalogue, however, included descriptions of many instruments which were not presented to the Society, whilst the Loan Collection is enriched by a considerable number of forceps, etc., given to the Society after 1866. At the end of the Catalogue was a bare list of instruments "presented to the Society's Museum." A second very meagre Catalogue was appended to the seventeenth volume of the *Transactions of the Obstetrical Society of London* (1875), and Vol. 22 bears the word "Museum" on its back, but by some oversight the catalogue of the Museum was not bound up with that volume. No *descriptive* catalogue of the *Museum* was ever issued by the Obstetrical Society, nor was any note kept of instruments acquired by purchase.

To the description of each instrument belonging to the Loan Collection the words "Royal Society of Medicine" are added, while to the description of those belonging to the College of Surgeons the names of the donor or "Donor unknown" are appended.

N.B.—Dealers' names are placed in inverted commas, "Laundy," "Botschan," etc., except where the dealer was the recognized inventor of the instrument.

In the preparation of this Catalogue the Compiler has had the advantage of the valuable assistance of Miss Agnes Hannam, formerly Secretary to the Obstetrical Society of London; Sir Arthur Keith, Conservator to the Museum of the College; and Victor Plarr, Esq., Librarian; C. S. Thompson, Esq., Conservator, Wellcome Museum; Professor Henry Briggs, President, Obstetrical and Gynæcological Section, Royal Society of Medicine; Dr. R. W. Johnstone, and Dr. F. W. Cock.

For invaluable aid in the investigation and correct description of the essentially mechanical features of the instruments, the compiler is deeply indebted to Mr. William Finerty, Catalogue Keeper to the Museum; and to Mr. J. Barry Hopkins, of over fifty years' experience in the manufacture of surgical and orthopædic instruments and appliances.

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CATALOGUE.

1. Dusée's Forceps.

Weight 1 lb. 6½ oz. (640 grms.); length 16 in. (40.5 cm.); length of blades to upper lock 7 in. (17.7 cm.); do. do. lower lock 9¼ in. (23.5 cm.); greatest breadth of blades 1½ in. (3.8 cm.); greatest breadth across blades when closed 3 in. (7.6 cm.); distance between extremities of closed blades ½ in. (1.27 cm.).

Each blade and handle is forged in one piece, the blade being elastic. Each handle is cylindrical and ends in a blunt hook turning upwards for 2½ in. (6.35 cm.); above, the handle ends as a solid block of steel into which two depressions are cut to receive blade and screw. Thus there are two locks, 1¾ in. (4.4 cm.) apart; one thumb-screw or screw-plug serves for both. The blades cross at the lock. This mode of locking allows of three adaptations, if necessary, so that the instrument may be used, as a long forceps, a short forceps or an asymmetrical instrument such as was devised by David Davis (No. 19) and Radford (Nos. 32, 33).

The blades are not fenestrated, and are of a curvilinear form, the first curve being about 60° outward from the handle for about half its length, and the inner or return curve about 85°, terminating in ends with a concave notch to prevent pressure on the temporal arteries of the fœtus. There is no pelvic or perineal curve.

Dusée never described his own forceps, although he wrote on Obstetrics. According to his pupil, De Wind, ("'t Geklemd Hoofd geredt," 1751) another pupil named Boswell procured for Butter the sample which was made public in Edinburgh in 1733 ("Medical Essays and Observations," Vol. 3, 1737). Smellie employed it, and found it unsatisfactory. Its deficiencies apparently suggested to him the pelvic curve. (Smellie's "Treastise on the Theory and Practise of Midwifery," New Sydenham Soc., Ed., vol. i, p. 214; vol. ii, pp. 250, 375.)

See Doran, "Dusée, His Forceps and His Contemporaries," *Journ. of Obstet. and Gynæc. of the Brit. Emp.*, vol. xxii, p. 119; and "Dusée, De Wind and Smellie," *ibid.*, p. 203.

This instrument was presented (together with No. 2) to the Obstetrical Society of London in 1866 by Mr. Durroch, a surgical instrument maker in the Borough, without any statement as to its former owner. Most probably it was made as a model for a museum or for the instruction of students. The double lock arrangement never came into regular use. The forceps designed by Thureaux of New Orleans had a similar lock.

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2. Grégoire's Forceps with Sharp Hook.

Weight 1 lb. 9 oz. (702 grms.); length 1 ft. 5 in. (43.18 cm.); length of blades 8½ in. (21.5 cm.); breadth of blades 1¾ in. (4.4 cm.); breadth of fenestræ ¾ in. (1.9 cm.); space betwen extremities of closed blades almost *nil*; greatest breadth across blades 2⅜ in. (6 in.).

Each blade and handle is forged in one piece of steel.

The handles are smooth, rather slender, bowed somewhat outwards and not lined with wood or covered with leather. One handle is everted at its extremity, the other is turned in and bears a hole to which was fitted a sharp crotchet on a spring, which has been lost. The lock is a plain screw fixed into a slotted joint to admit of a radial deviation, as the screw bears no thumb-piece a screw-driver would have been required to fix or remove it. The fenestræ are 7½ in. (19 cm.) long, but are narrow. There is no pelvic curve and the cephalic curve is but slight. The blades are flat on their inner surface and their edges are thick and blunt.

For a description of this instrument, see Doran, "A Demonstration of some Eighteenth Century Obstetric Forceps," *Proc. Royal Soc. Medicine, Sect. Hist. of Medicine,* vol. vi, 1913, pp. 54—76. The blades of handles are straighter than in the typical Grégoire's forceps, originally described by Boehmer. In Coutouly's forceps the handles were similar, being long and relatively straight (Mulder, "Historia Forcipum," pl. x, fig. 1), but the blades bore the pelvic curve. The crochet arrangement is a modification possibly suggested by Freake's instrument (figured in Giffard and Hody's "Cases in Midwifery," 1734), unless Freake borrowed the idea from Grégoire. A forceps identical with this instrument, but with the sharp crotchet and its guard preserved complete, is to be seen in the Obstetrical Museum of the University of Edinburgh.

Presented to the Obstetrical Society of London in 1866 by Mr. Durroch (see No. 1). While the antiquity of No. 1 is doubtful, this sample of Grégoire's forceps was probably manufactured early in the 18th century, when its type was used by a few obstetricians. In the "List of Instruments presented to the Society's Museum" in the "Catal. Obstet. Soc., 1866," this forceps and No. 1 are entered (p. 228) as "Antique (2 pairs) . . . Durroch."

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3. Smellie's Short Wooden Forceps: The English Lock.

Weight 5½ oz. (156 grms.); length 10½ in. (26.6 cm.); length of blades 6 in. (15.25 cm.); breadth of blades (broadest near tips) 1¼ in. (3.17 cm.); greatest width across blades 2¼ in. (5.7 cm.); the tips of the blades touch when the handles are closed.

Both limbs are cut out of a single piece of boxwood, English lock, handles very short. There is a palm rest, with the groove for tapes, as seen in most English forceps ever since Smellie's days. The handles bear no shoulder or finger-rest. The blades have a wide cephalic curve, no pelvic curve and no shanks. There are no fenestræ, but the wood on the inner side of the blades is widely cut out and grooved, so as to grasp firmly the fœtal head.

"I had before this occasion contrived a particular kind of wooden forceps with which I had delivered three patients, but I now substituted steel covered with leather in the room of wood, which is not so durable." Report of Case 269 (no date), Smellie, "Treatise on the Theory and Practice of Midwifery," edited by Dr. McClintock, New Syden. Soc., 1861, vol. ii, p. 359. The Editor notes that this is almost the only occasion where Smellie mentions his wooden forceps.

The "English lock," which requires no screw or pivot, is seen in this forceps, and remains the most popular form of lock amongst Obstetricians in the British Empire. Chapman, dropping at a labour the screw which he had made for the lock of his forceps, found "that the instrument did its office much better without the screw" ("Essay on the Improvement of Midwifery," 1733. In the second edition, 1735, Chapman figures his forceps with the screwless "English lock"). McClintock, on insufficient grounds, considered that Smellie originally devised this lock, giving the date as 1744 (notes to Smellie's "Treatise," vol. i, pp. 21 and 259).

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4. Smellie's Long Forceps with Pelvic Curve.

Weight $13\frac{1}{2}$ oz. (383 grms.); length of forceps $12\frac{1}{4}$ in. (31.1 cm.), of blades $7\frac{1}{2}$ in. (19 cm.); greatest breadth of blades $1\frac{3}{4}$ in. (3.17 cm.); greatest space across blades $2\frac{3}{4}$ in. (7 cm.); distance between tips when close *nil*; length of fenestræ $4\frac{3}{4}$ in. (12.1 cm.); greatest breadth $\frac{5}{8}$ in. (1.5 cm.).

Metal limbs completely covered (included fenestræ) with leather. As in the wooden forceps, the blades are slender and broadest near the tips, where they touch when the handles are closed. Palm rest, no shoulder or finger-rests, shanks not distinct from blades.

In 1737 Smellie, then but little experienced in obstetrics, made use of Dusée's forceps (see No. 1), "the French forceps recommended by Mr. Butter," but found it too long and ill-formed, and so performed craniotomy and evisceration. He notes that in 1746 he used his own forceps, but that at that date its handles "were not altered from crooks to wooden handles." He set no value on his wooden forceps, and used for many years exclusively a

forceps shorter and smaller than Chapman's, Giffard's or Pugh's (Smellie and McClintock, *loc. cit.*, No. 3). In 1752, in endeavouring to deliver the aftercoming head in a breech case, the short, straight forceps proved a failure, "this was the reason which prompted me to contrive a longer kind, the blades of which are curved" (*loc. cit.*, vol. iii, p. 23). In 1753, Smellie had to deal with an arm presentation. The foot was brought down. As the funis still pulsated, he resolved to try his long curved forceps and succeeded in saving the child. McClintock states that Smellie apparently restricted the use of his long forceps for cases where instrumental delivery of the aftercoming head was necessary, and for cases of face presentations where the chin lay towards the sacrum.

Pugh seems to have employed a forceps with the pelvic curve about fourteen years before Smellie's curved forceps was first constructed (see Aveling, "The Curves of Midwifery Forceps—their Origin and Uses," *Trans. Obst. Soc.*, vol. xx, p. 130). Levret figured his *forceps courbe* in his "Observations sur les causes et les accidens de plusieurs, accouchemens laborieux," 1st ed., 1747.

In the "Catal. Obstet. Soc., 1866," the only notice of this instrument is that placed (p. 102) under "*Short Forceps,*" namely, "Smellie's straight, and covered with leather."

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5. Levret's Forceps.

Weight 2 lb. 2 oz. (965 grms); length 1 ft. $6\frac{1}{4}$ in. (46.3 cm.); length of blades 9 in. (22.8 cm.); breadth of do. 2 in. (5 cm.) near tip, greatest breadth across blades $2\frac{7}{8}$ in. (7.3 cm.); distance between tips when closed $\frac{1}{8}$ in. (0.3 cm.); length of fenestræ $5\frac{1}{2}$ in. (14 cm.); breadth of do. 1 in. (2·5 cm.).

Each limb forged out of a single piece of steel. Handles long and stout, flattened externally, $1\frac{1}{4}$ inch (3.17 cm.), broad in the middle, bowed slightly outwards, roughened by deep indentations cut so as to make a herring-bone pattern. Handle of left blade turned up, handle of right turns outwards at a right angle and unscrews to adapt the handle to the purposes of a perforator. At the lock the handles are flattened antero-posteriorly. A slot in the female or right blade receives a thumb lock attached to the left or male blade, the thumb lock revolving so as to fix the lock after it has been passed through the slot, as in Rizzoli's short forceps preserved in this collection (No. 46). The blades are stout, with a strong pelvic curve, and are flattened on their inner surface, the lower extermity of each fenestra is rounded, with well-bevelled edges, for the application of tapes.

This is the typical old French forceps, representing the third and

last modification made by Levret himself. The lock is of the simplest type (in the more modern "French lock" of Dubois, the screw is fitted into a lateral mortise, not a slot, in the opposite blade), the contrivance for passing a tape through the fenestræ, prolonged towards the lock, was a feature from the first (*circ.* 1760) in this modification, described by Levret's pupil Stein. The pelvic curve had already been introduced in 1747 by Levret. Smellie quite independently applied the *curvatura nova* to his long forceps in 1752; after Smellie and Levret had published accounts of their forceps with the pelvic curve, Pugh of Chelmsford claimed that he had contrived a similar instrument about 1740, and used it freely. For Levret's latest writings on his forceps, see his "Suite des Observations sur les causes et les accidens de plusieurs accouchemens laborieux," 1770, chapters "de l'utilité du nouveau forceps courbe," p. 163, and "addition à l'histoire des forceps," p. 217. He figures his forceps, Pl. ii, fig. 1, *loc. cit.*, the lock is not quite identical with that seen in this instrument, a broad-headed fixed pin instead of a thumb-lock fitting into the slot. See Charpentier, "Traité pratique des Accouchements," 1890, vol. ii, p. 680, for a clear summary of the development of Levret's forceps. This sample is probably modern.

The utilization of the ends of the handles for perforators and sharp hooks in Dubois' modification of Levret's forceps, became popular in France. Pajot taught his pupils that the perforator and sharp hook were placed there, he trusted, to remind them they should never be employed. See Witkowsky, "L'Arsenal Obstétrical," p. 76. *Royal Society of Medicine.*

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6. **Orme's Forceps.**

Weight 8 oz. (255 grms.); length $10\frac{5}{8}$ in. (27 cm.); length of blades $5\frac{1}{2}$ in. (14 cm.); breadth of do. $1\frac{1}{4}$ in. (3.17 cm.) at base, $\frac{7}{8}$ in (2.2 cm.) at tip; space between extremities of closed blades $2\frac{1}{2}$ in. (6.35 cm.); greatest breadth across blades $3\frac{3}{8}$ in. (8.5 cm.); breadth of fenestræ $\frac{3}{4}$ in. (1.9 cm.); length of do $3\frac{7}{8}$ in. (9.8 cm.).

N.B.—Makers' names were seldom, if ever, stamped or cut on surgical instruments until after 1760.

This instrument in measurements, and in the leather lining of the blades, which does not cover the fenestræ, and in the character of its handles corresponds to Orme's original design according to Kühn and Mulder.

"Dr. Orme thought he could improve on Dr. Smellie by shortening the forceps further, making the blades rounder and wider towards the lock to suit the parietal bones" (Lowder, MSS. "Theory and Practice of Midwifery," 1782, in Library Royal Soc.

Med.). The broad blades become narrower towards the free ends which lie far apart when the handles are closed, whilst Smellie's forceps were broadest at the free ends which touched when closed. This instrument, $10\frac{5}{8}$ in. (27 cm.), is shorter than Lowder's ($11\frac{1}{3}$ in., Mulder), and its blades are covered with leather. It more resembles Kilian's drawing of Orme's forceps ("Armamentarium Lucinæ Novum," Pl. xviii) than Mulder's ("Historia Forcipum," 1794, Pl. v, figs. 1 and 2).

Orme, Lowder, and Haighton were all, in succession, lecturers in the United Borough schools. Kühn described Orme's forceps as a modification of Smellie's in 1783. Mulder studied under Orme and Lowder, and described and drew the forceps of both his teachers (*loc. cit.*, p. 66, and Pl. V, figs. 1 to 4). There are many discrepancies in the descriptions, drawings and measurements of Orme's forceps and its modifications in the works of contemporary and later writers, and some variations are seen in museum collections which do not precisely correspond to any modification described by these writers.

See Doran, "A Demonstration of Some Eighteenth Century Obstetric Forceps," *Proc. Royal Soc. Med., Sect. History of Med.*, vol. vi, 1912–13, pp. 54—76. *Royal Society of Medicine.*

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7. Orme-Lowder Forceps.

Weight 11 oz. (312 grms.); length 11 in. (28 cm.); length of blades $5\frac{1}{2}$ in. (14 cm.); breadth of do. (broadest near base) $1\frac{3}{4}$ in. (4.4 cm.); greatest breadth across blades $3\frac{3}{4}$ in. (8.2 cm.); distance between tips when closed $1\frac{5}{8}$ in. (4.12 cm.); length of fenestræ $4\frac{1}{4}$ in. (10.7 cm.); breadth of do. 1 1/5 in. (2.85 cm.).

This instrument shows the characteristics of the forceps devised by Orme, as modified by Lowder. The handles bear a palm-rest and taper without any shoulder towards the lock. They are covered with leather, but it is not clear whether the lining extended to the shanks or ceased at the upper end of the handle. The lock is "English," after Smellie's pattern. The shanks are long, curved and very divergent. The blades are of conspicuous breadth, widely fenestrated throughout nearly their entire length, and narrower towards the free ends which are far apart when the handles are closed. The blades have a wide cephalic, but no pelvic curve and are quite flat on their inner surface.

This instrument is longer than Orme's; the handles are lined with leather which Lowder ultimately rejected according to Mulder (*loc. cit.*, No. 6). In describing Orme's forceps, Lowder (*loc. cit.*, No. 6) states: "I thought they might be improved by locking lower down in the handle to avoid pinching the mother, but when

I came to use them I found they required more force to hold them together, that what I gained one way I lost on another.'' It is longer and stronger than Orme's original instrument.

This forceps was presented to the Obstetrical Society of London by Dr. W. A. Bonney, who described it as a short forceps belonging to his grandfather, Dr. William Ralfs and in use before 1815. Many practitioners preferred the Orme-Lowder forceps to Denman's, as in their hands at least it was less likely to slip from the fœtal head.

This forceps is figured in Doran, *Loc. cit.* (No. 6), fig. 7, and p. 60. *Royal Society of Medicine.*

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8. **Orme-Lowder Forceps.**

Weight 8 oz. (227 grms).; Length 10 in. (25.4 cm.); length of blades $5\frac{1}{2}$ in. (14 cm.); breadth of do. $1\frac{3}{8}$ in. (3.5 cm.) at base; greatest breadth across blades 3in. (7.6 cm.); distance between tips $1\frac{1}{2}$ in. (3.8 cm.); length of fenestræ 4 in. (10.16 cm.); breadth of do. $\frac{3}{4}$ in. (2 cm.); shanks $1\frac{1}{2}$ in (3.8 cm.).

This instrument is of the same type as the two which precede it. It corresponds to Orme's forceps according to Mulder in its shortness, indeed it is one-third of an inch (about 8 millimetres) shorter, and in its long, distinct shanks it resembles Orme's forceps as represented in Kilian's ''Armamentarium,'' Pl. xviii, although Mulder, a pupil of Orme's, gives no distinct shanks. Unlike Orme's it was clearly never covered with leather. It differs from Lowder's and Haighton's in being, like Orme's, much shorter, and can be distinguished from Haighton's by the blades being, as in Lowder's and Orme's, distinctly broader at the base than at the tip, whilst the fenestræ are not of such extreme width as in Haighton's forceps. In this instrument the fenestræ are intermediate in length between those of Orme ($3\frac{1}{2}$ in, 8.8 cm.) and those of Lowder and Haighton ($4\frac{1}{2}$ in., 11.4 cm.). This instrument, presented by Mr. J. Birkett, Surgeon of Guy's Hospital, was probably a late imitation of the original Orme-Lowder type, as it remained popular, and was preferred by many practitioners who had studied at the United Borough schools, to Smellie's, Osborn's and Denman's instruments, even to the middle of the nineteenth century. Its handles are covered with smooth ebony and in all respects are of relatively modern type. In its extreme lightness, 8 oz. (227 grms.), it recalls T. W. Beatty's (No. 30) and More Madden's forceps (No. 56), indeed it is lighter than either, and one ounce (28 grms.) less in weight than Vacher's cross-handled instrument (55A). *John Birkett, Esq.*, 1870.

9. Haighton's Forceps.

Weight 9½ oz. (269 grms.); length 11 in. (28 cm.); length of blades 6½ in. (,6.5 cm.); breadth of do. (base) 2¼ in. (7 cm.); breadth across blades 2¾ (7 cm.); distance between tips when closed ½ in. (1.2 cm.); length of fenestræ 4¾ in. (12.1 cm.); breadth of do. 1½ in. (3.8 cm.).

A development of the Orme-Lowder instrument, Haighton being the successor of Lowder as teacher of Obstetrics at the United Borough schools. The most characteristic feature in this modification is the extreme breadth of the blades and fenestræ; in some samples they are of almost uniform breadth throughout. The handles are lined with leather as in Orme's, the shanks are moderately divergent and the distance between the tips of the blades when closed is not great.

Blundell, the nephew of Haighton, and his successor as lecturer on Obstetrics at the Borough schools, commended Orme's forceps, but found that the fenestræ were too narrow. "Now Dr. Haighton's instrument has the advantage of a large fenestra . . . . so that the protuberance of the parietal bones lying in the fenestra on a level with the blade, or even projecting a little beyond, there is no addition of bulk over the protuberance" (Blundell's "Principles and Practice of Obstetricy," 1834, p. 520), but Blundell found that the blades were too broad to allow of easy introduction.

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10. Osborn's Forceps.

Weight 11 oz. (326 grms.); length 11¼ in. (28.125 cm.); length of blades 6½ in. (16.5 cm.); breadth of do. 1½ in. (3.8 cm.); breadth of fenestræ 1⅞ in. (4.75 cm.); distance between extremities of closed blades ¾ in. (1.95 cm.); greatest breadth across blades 2¾ in. (7 cm.).

The handle and blade of each limb are forged in one piece and completely covered with leather. The handles bear a palm rest and taper, without any finger rest or shoulder, to the lock. The blades part at the lock without any shank, the cephalic curve is moderate and there is a distinct pelvic curve. The fenestræ, covered with leather, are long and narrow.

This instrument corresponds to a drawing in Osborn's "Essays on the Practice of Midwifery," 1792, p. 50. Denman had already referred to this forceps in 1783 ("A Vindication of the Forceps described and recommended by Dr. Leake") saying: "The curve of the Levrett's (*sic*) forceps seems the most convenient, and Mr. Osborn has contrived a very elegant pair, by diminishing the size of Levrett's and very little alteration besides."

For a description of this forceps and its history see Doran, "A Demonstration of Some Eighteenth Century Obstetric Forceps," *Proc. R. Soc. Med.*, vol. vi, 1913, Section of the History of Medicine, p. 69, and fig. 9.

Received by the donor from an old practitioner.

Dr. Clement Dukes.

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11. **Denman's Forceps.**

Weight 10 oz. (283 grms.); length 11 in. (28 cm.); length of blades $6\frac{1}{2}$ in. (16.5 cm.); breadth of do. $1\frac{1}{2}$ in. (3.8 cm.); greatest breadth across do. 3 in. (7.6 cm.); distance between tips when closed $\frac{3}{4}$ in. (1.9 cm.); length of fenestræ $4\frac{1}{2}$ in. (11.4 cm.); width of do. 1 in. (2.5 cm.).

A straight forceps, each limb forged out of one piece of metal, handles lined with smooth ebony the upper border forming a narrow shoulder. Palm rest, but no finger rest. Blades with a wide cephalic curve, and broadest at the tips which lie nearly one inch apart when the handles are closed. Shanks run into the upper part of the blades with barely a trace of limitation, flattened antero-posteriorly. "Denman's forceps" shows a return to the type of Smellie's short straight forceps in the blades, which are broadest at their extremities, bear relatively narrow fenestræ, and have no markedly distinct shanks, but it resembles the Orme-Lowder type in that the extremities of the blades do not touch when the handles are closed.

The instrument here exhibited is of comparatively modern make, showing a trace of demarcation between the shanks and the blades. Many trifling modifications of Denman's forceps, where all the essential characters mentioned above were retained, have been constructed and sold and used as "Denman's forceps" or passed under the name of some obstetrician or instrument maker who devised the modifications.

The Governors of the Westminster Hospital.

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12. **Hamilton's Forceps.**

Weight $12\frac{1}{2}$ oz. (354 grms.); length 11 in. (28 cm.); length of blades $6\frac{1}{2}$ in. (16.5 cm.); breadth of do. $1\frac{1}{2}$ in. (3.8 cm.); broadest near tip; greatest breadth across $2\frac{3}{4}$in in.; 7 cm.); space between extremities of closed blades $\frac{1}{2}$ in. (1.27 cm.); length of fenestræ $4\frac{3}{4}$ in. (12.1 cm.); breadth of do. 1 in. (2.5 cm.). No maker's name.

Both handles covered with smooth wood; palm rest, the handle of the right blade is jointed immediately below the lock (English

type) and opens outwards. The other handle is solid steel, continuous with the blade.

Blades stout, strong pelvic curve, fenestræ relatively narrow, inner surface plane. No distinct shanks. Dr. James Hamilton, jun., describes this instrument in an article entitled "Observations on the Instrument employed in the Practice of Midwifery, commonly called Lowder's Lever," published in Andrew Duncan's "Medical Commentaries for the Year 1793," 2nd decade, vol. viii, p. 405 *footnote*. "The forceps which I use are nearly of the same shape as those of Dr. Wallace Johnston. . . . . The right-hand blade has a hinge between the handle and blade, by which it is easily introduced, while the patient lies on the left side." A similar instrument and others with several variations in the joint in the handle are preserved in the Obstetrical Museum of the University of Edinburgh. See Doran, "Jointed Obstetric Forceps," *Journ. of Obstet. and Gynæcol. of Brit. Empire,* vol. xxiv, p. 197 (Oct. 1913).

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13. **Assalini's Forceps.**

Weight 11¼ oz. (319 grms.); length 11¾ in. (29.8 cm.); length of blades 5½ in. (15.5 cm.); breadth of do. 1½ in. (3.8 cm.); greatest breadth across do. 2¾ in. (7 cm.); space between tips when closed ½ in. (1.2 cm.); length of fenestræ 5 in. (12.7 cm.).

No maker's name.

Entirely metal, blades not crossed, handles incurved at lower extremity, forming hooks which face each other, and are connected by a tenon and mortise. The handles are file-cut outside, and nowhere in contact. Blades straight, fenestrated, wide curve, no distinct shanks; inner surfaces flat, borders hardly bevelled.

Assalini's is the only forceps with the lock at the lower extremity that has ever come into fairly general use. Rathlauw (Mulder, "Historia Forcipum," p. 31 and Pl. ii, fig. 15), Schlichting (*ibid.*, p. 32 and Pl. iii, fig. 16), Thénance (Kilian's "Armamentarium," fig. 573) designed forceps with the same feature; in Mondotte's forceps and Mattei's "leniceps," as well as in Vacher's (55A) and Draper's forceps, and Hamon's "retroceps," the blades were fitted to a transverse bar which formed the handle. Mattei's and Mondotte's instruments are described and figured in the Catal. Obstet. Soc., 1866, pp. 96, 98, and figs. 76, 77 and 79. De Wind's forceps (Mulder's "Historia," p. 41, and Pl. iii, figs. 11 and 12) has no joint at all. Assalini's forceps was originally made with solid spoon-like blades (Kilian's "Armamentarium," Pl. xxv), the later patterns being fenestrated.

The original drawing is Pl. i in Gervasoni's "Su L'Uso de

nuovi stromenti di Ostetricia del Cavalieri Prof. Assalini," 1811; and in the same year the same drawing also appeared in Assalini's "Nuovi stromenti di Ostetricia e loro uso," Pl. i, fig. 1.

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14. D. W. Busch's Forceps with Finger-rests.

Weight 1 lb. 4 oz. (567 grms.); length 14 in. (35.6 cm.); length of blades $7\frac{3}{4}$ in. (19.7 cm.); greatest breadth do. $1\frac{3}{4}$ in. (4.4 cm.); greatest width across $2\frac{5}{8}$ in. (6.6 cm.), distance between tips when closed $\frac{3}{8}$ in. (0.9 cm.); length of fenestræ 4 in. (10.16 cm.); breadth of do. $\frac{7}{8}$ in. (1.2 cm.). "A. Lutter."

This long forceps of an old type has been covered with black rubber. The long handles have a palm-rest, but smaller than in the English type, there are very wide flanges; more correctly called finger-rests (see note on Simpson's long forceps, No. 26), and the lock is English with the clip omitted on the handle of the right blade (see No. 3). Each handle, much thinned, is prolonged for an inch and a half (3.8 cm.) above the finger-rest. The blades have a marked pelvic curve and are flattened antero-posteriorly for some way above the lock. The inner surfaces of the blades are very slightly convex.

Johann David Busch invented this forceps and described it in a paper, "Beschreibung einer neuen Geburtszange nebst einigen Beobachtungen über ihre Anwendüng," in Stark's *Archiv. f. die Geburtshülfe,* etc., vol. vi, pl. 3, 1796, p. 438, with drawings. J. D. Busch introduced the finger-rests. By the application of the fore and middle fingers to the rests, traction is greatly facilitated. The finger-rests may have been suggested by the "blunt knobs" on the handles of a forceps designed by Aitken and described in the third edition of his "Principles of Midwifery," 1786; but Aitken meant that the fore and ring fingers should be placed in the "blunt knobs" in order to protect the maternal parts, the middle finger being placed in the space between the shanks. Johann David Busch's finger-rests, designedly intended for facilitating traction, met with the approval of his more celebrated son, Dietrich Wilhelm Busch, who added the trifling modification here present, namely, the lengthening of the handles for over an inch above the finger-rests. This modification is figured in Kilian's "Armamentarium lucinæ Novum," Pl. xxviii. In this sample the handles are constructed so that their inner surfaces do not touch between the ends and the lock. The practice of coating forceps with rubber seems to have been introduced by Osiander at the end of the 18th century (see Schlegel's translation of Mulder's work "Geschichte der Zangen und Hebel," 1798, p. 120).

See Doran, "Some Eighteenth Century Forceps in the Museum of the Royal College of Surgeons of England," *Trans. XVIIth Internat. Congress of Medicine,* Section XXIII, History of Medicine, p. 445. *Royal Society of Medicine.*

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15. **Mursinna's Forceps.**

Weight 2 lbs. (908 grms.); length 18 in. (45.7 cm.); length of blades 9 in. (22.8 cm.); breadth of do. $1\frac{3}{4}$ in. (4.4 cm.); greatest breadth across blades $2\frac{5}{8}$ in. (6.6 cm); distance between closed tips $\frac{5}{8}$ in. (1.5 cm.); length of fenestræ $6\frac{3}{4}$ in. (17.1 cm.); breadth of do. $\frac{3}{4}$ in. (1.95 cm.). "Gribel."

A very powerful instrument, in general of the Levret type. Each limb is forged out of one piece of steel. The left limb bears a pin in the depressed portion of the lock, and below the lock a screw is fixed forming an axle on which a radial block lock, $2\frac{1}{2}$ ins. (6.35 cm.) long revolves. Immediately above the lock is a deep groove made to receive the incurved free end of the block lock. The right blade is slightly wider in its shank at this point, in order to check the bolt, and a hole in its lock portion receives the pin in the left limb. When the block lock is fixed in the groove the lock is complete, when it is rotated downwards the blades can be detached. The handles are flattened laterally, not rounded and perfectly smooth; their ends are rectangular.

The blades bear a strong pelvic curve, the lowermost extremities of the fenestræ show evidence of a brazing, probably for traction purposes.

The original of this instrument is preserved in the Kaiser Wilhelm Akademie für den Militarärzte Bildungswesen, Berlin, where Mursinna taught when the Academy was known as the Pepinière-Schule für Militarärtze. Mursinna (1744—1823) was a celebrated Army surgeon and later in life practised and wrote on Obstetrics as well as general surgery. He describes and figures this instrument in an Annual Report of the Births in the Charité, Berlin, published in his "Neues Journal für die Chirurgie, Arzneikunde, and Geburtshülfe," 1803, p. 135, and Pl. 1. The lock, he admits, was adopted from Osiander's forceps, otherwise quite a different instrument. It was afterwards copied by Weissbrod of Munich. This instrument is simplified from Mursinna's original model, where the block lock bore a small thumb-piece and both handles were notched above the lock so as to allow the incurved end of the block lock to pass over them.

See A. Doran, "Mursinna, Osiander, Weissbrod; A Study of Forceps," *Journ. Obstet. and Gyn. Brit. Emp.*, vol. xxxiv, 1913, p. 1. *Royal Society of Medicine.*

16. **Conquest's Forceps.**

Weight 1 lb. (454 grms.); length 13½ in. (34.29 cm.); length of blades 7½ in. (19 cm); breadth of do. 2 in. (5 cm.), broadest in middle and narrowest near tip; greatest breadth across blades 3 in. (7.6 cm.); space between extremities of closed blades ¾ in. (1.95 cm.); length of fenestræ 5 in. (12.75 cm.); breadth of do. 1⅜ in. (3.5 cm.).

"Botschan, 35, Worship Street."

Medium forceps, the left limb forged in one piece and an ebony handle fixed to it. The handle of the other (right or upper) limb is made entirely of ebony and bears a metal top with a female screw for the corresponding blade. Palm rest, no finger rests, English lock. The blades are straight, having no pelvic curve, but bear long shanks, measuring 2 in. (5 cm.) not taken along the curve, with a marked perineal curve, and are quite flat on their inner surfaces. For the designer's description of his screw contrivance see Conquest, "Practical Remarks on Obstetric Instruments," *London Medical Repository*, March 1, 1820, with illustration. He devised the screw arrangement by which the upper blade could be detached from its handle so that there should be "no difficulty in introducing the upper blade of the short forceps directly over the vertex, without changing the position of the patient. After the blade is fixed, of course, the handle is to be screwed on and the instrument used as any other" (*loc. cit.*, p. 188).

This instrument bore a label "Conquest's forceps, presented by the City of London Lying-in Hospital"—it belonged to a box (No. 338) presented per Dr. Outhwaite from the same hospital. This box (No. 358) also contained Conquest's craniotomy forceps, No. 95).

See Doran, "Jointed Obstetric Forceps: Conquest, Hamilton, Davis," *Journ. of Obstet. and Gyn. of Brit. Emp.*, vol. xxiv, p. 194 (Oct. 1913); with plates.

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17. **David Davis's Forceps with Wide Fenestræ.**

Weight 12 oz. (340 grms.); length 1 ft. 0½ in. (31.75 cm.); length of blades 7¾ in. (19.7 cm.); breadth of blades 2½ in. (5.4 cm.); breadth of fenestræ 1½ in. (3.8 cm.); distance between extremities of closed blades 1¼ in. (3.17 cm.); greatest breadth across blades 3 in. (7.6 cm.).

"Botschan, 35, Worship Street."

Blades symmetrical, the left blade and handle forged in one piece, the right blade jointed. English lock.

The handles are coated with ebony and bear the usual palm-rest, but no shoulder or finger-rest. The shanks, about 1 inch (2.5 cm.) long, diverge at an angle of 45°, that of the right-hand blade was

originally fitted with a circular joint in the shank. "The blades are much broader than those of any other English forceps with the exception of Haighton's." They are greatly hollowed out interiorly so as "to lie in close contact with the every part of the child's head to which they are applied and to admit of the reception and firm purchase of extensive portions of its lateral parietes." On their inner surface the blades slope towards the border of the fenestræ so as to take up less space in the pelvis. The pelvic curve is marked, but there is no perineal curve.

The circular joint in the shank of the right blade was fitted on so as to allow it to be placed at any angle. It could be fixed or released at will by means of a spring catch which has been mostly destroyed by rust, so that the blade was broken off at the joint during an attempt to bend it (1912); it has been repaired without restoration of the joint action. The blade was jointed so as to bend outwards in the contrary direction to a folding vectis, and David Davis believed that this expedient "may add occasionally to the facility of introducing the right-hand branch."

Fully described with the succeeding instruments in David Davis' "Elements of Operative Midwifery," 1825, pp. 38—41 and 201 *et seq.*, with Pl. i to v, and in his "Principles and Practice of Obstetric Medicine," 1836.

This figure is also figured and described by Murphy, Davis's successor, in his "Lectures," 1862, who taught that it was quite unsuited for practitioners and obstetricians unless of long experience (p. 362 and fig. 104). See Doran, *loc. cit.*, No. 16, p. 206, and fig. 8. *Royal Society of Medicine*, 1912.

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18. **David Davis's Forceps with Narrow Fenestræ.**

Weight 11½ oz. (347 grms.); length 1 ft. ½ in. (31.75 cm.); length of blades 7¾ in. (19.7 cm.).; breadth of blades 1¼ in. (3.17 cm.); breadth of fenestræ ¾ in. (1.9 cm.); distance between extremity of closed blades ⅝ in. (1.5 cm.); greatest breadth across blades 2½ in. (6.35 cm.). "Boischan, London."

Blades symmetrical and forged in one piece with handle. English lock.

The handles are coated with ebony and shaped as in the previous instrument. The shanks are also similar, but neither is jointed. On their inner surface the blades slope towards the margin of the fenestræ. They are unusually narrow, the other forceps have unusually broad blades and the greatest breadth between the blades is but 2½ in. Pelvic curve marked, no perineal curve. This instrument is not figured in Davis's work, but each

blade is very like that represented as being introduced into the pelvis in Pl. iii, fig. 1. It seems identical with Haighton's forceps with narrow fenestræ (Radford's "Essays on Midwifery," Pl. i, No. 2 A), but is unlike the type of forceps generally associated with the name of Haighton.

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19. David Davis's Asymmetrical Long Forceps for Cases of Arrest of Fœtal Head in Transverse Position.

Weight 1 lb $4\frac{1}{2}$ oz. (490 grms.); length of each long blade and handle 1 ft. $2\frac{1}{2}$ in. (36.8 cm.); length of short blade and handle 1 ft. $\frac{1}{2}$ in. (31.75 cm.); length of each long blade 10 ins. (25.4 cm.); length of short blade $7\frac{1}{2}$ in. (19 cm.); breadth of each long blade $2\frac{1}{8}$ in. (5.4 cm.); breadth of short blade 2 in. (5 cm.); length of fenestra of short blade $3\frac{3}{8}$ in. (8.5 cm.); breadth of do. $1\frac{1}{4}$ in. (3.17 cm.). "Dr. Davis's Forceps, Botschan, London."

Blades asymmetrical, forged in one piece with their handles, but upper part of long blade jointed 2 ins. (5 cm.) below its extremity. Two long blades, each bearing a transverse hinge-joint near its upper end; and one short blade serving for either long blade. Handles, coated with ebony, bear a palm rest. English lock. The long blade has a marked pelvic curve and is entirely coated with leather. Its fenestra is occupied by the apparatus for flexing the upper part of the blade. The short blade has no pelvic curve; it is coated with leather which does not cover the fenestra.

David Davis explains the application of this forceps in his work ("Elements," pp. 242 *et seq.*, and Pls. x, xi and xii). He believed that the ordinary long forceps was unsuitable for the relief of cases of arrest of the fœtal head at the superior aperture of the pelvis, under the circumstances of either of its transverse positions. This instrument was designed to make up for the deficiencies of the long forceps of the Smellie type. The long blade is covered with leather and lined with a padding of the softest flannel. If the face of the fœtus lay to the left, the long blade suited for the purpose was passed up along the left side of the pelvis fully extended at its joint. When it had reached upwards beyond the convexity of the forehead, the anterior part of the blade was bent down and applied closely to the face by turning the screw on the shank which moved a hinge at the joint on the blade. The long blade used when the face lay to the right has been stripped of its two leather coats and intermediate layer of flannel on its outer surface in order to display this mechanism. In Davis's "Elements" a sliding nut is

described and represented instead of the screw on the shank, otherwise the mechanism for flexing the upper part of the blade is the same. After the flexion of the longer blade, the shorter was then passed up along the right side of the pelvis and applied to the child's occiput to act as a fulcrum and an antagonist to the other, and lastly the two blades were adjusted at the lock. When the face lay to the right, the long blade suited for the purpose was employed as above described, but on the right side, and the short blade, constructed so as to serve for both the long blades, was applied to the occiput on the left.

See Doran, *loc. cit.*, No. 16, p. 208.

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20. David Davis's Short Blade for Use in Cases of Prolapsed Funis.

Weight $5\frac{1}{4}$ oz. (150 grms.); length 10 in. (25.4 cm.); length of blade 6 in. (15.24 cm.); breadth of blade 2 in. (5 cm.); breadth of fenestra $1\frac{1}{4}$ in. (3.17 cm.).

Forged in one piece, handle lined with smooth ebony; with palm-rest an inch above their extremities; English lock. Shank $1\frac{1}{2}$ in. (3.8 cm.) long. Blades with moderate cephalic curve, concave inside, sloping towards margin of fenestra. No maker's name.

David Davis states that he more than once successfully used this blade combined with a longer one for the relief of advanced labours complicated with protrusion of the cords ("Elements," pp. 167-8). The broad-bladed branch of his common forceps was passed on the side of the head opposite to that along which the loop of the cord had prolapsed. Davis then inserted this short blade on the other side in such a manner as to avoid pressure on any part of the cord. He found that the blade was capable of acting as a fulcrum to the longer branch by being applied to only a few points of an occipito-parietal portion of the fœtal head, not very remote from that centre of its presentation. Thus in Davis's opinion, a much greater power than was available by aid of the vectis could be exercised on the head of the child with but little additional risk of applying pressure to the cord.

This blade was presented by Dr. Hall Davis, son of the designer, to the Museum of the Obstetrical Society of London, labelled, "Short blade for use in cases of prolapsed funis." It seems identical with the short blade in Pl. ix.

Royal Society of Medicine, 1912.

21. David Davis's Oblique Forceps with Blades of Unequal Length.

Weight, "face to left" pair 12¼ oz. (347 grms.); "face to right" pair a little heavier; measurements the same, namely, length of handle and longer blade 11½ in. (39.2 cm.); of handle and shorter blade 10 in. (25.4 cm.); length of longer blade 7 in. (17.7 cm.); of shorter 5½ in. (14 cm.); breadth of longer blade 1½ in. (3.8 cm.); of fenestra of do. 1 in. (2.54 cm.); of short blade ¼ in. (3.17 cm.); of fenestra of do. ¾ in. (1.95 cm.).

"Botschan, 35, Worship Street, London.
Dr. Davis's Forceps."

Blades not symmetrical, forged in one piece with handles, as in D. Davis's forceps with narrow fenestræ, both blades have a pelvic curve, but of unequal curvature.

The shanks are 1¾ in. (4.4 cm.) long, the inner face of the blades is level, not sloping towards the fenestræ. The blades are very uneven.

David Davis used these two forceps, which he held to be specially adapted to cases of the third and fourth positions of the vertex; "*i.e.*, the positions with the face directed to the right and left side of the pelvis respectively." The longer blade was applied to the latero-frontal part of the fœtal head and face and was carried up into the direction of the anterior termination of one of the oblique diameters of the pelvis; whilst the shorter blade was carried up in the direction of the opposite termination of the same diameters, so as to correspond to one or the other, as the case might be, of the sacro-iliac junctions and applied to an occipito-lateral part of the head immediately behind the ear. See D. Davis, "Elements," pp. 42-3, Pl. vii, viii, where they are represented covered with leather. He also used the short blade with either counterpart of his broad-bladed forceps (see No. 19), in cases of uterine inertia, where a very moderate amount of mechanical assistance appeared beneficial and where "there might be a motive for applying à principal part of the artificial force deemed useful in one particular locality principally, relatively either to the fœtal head, or to the cavity of the pelvis" (*ib.*, p. 43 and Pl. xix). The blades were covered with leather when in use.

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22. Blundell's Long Forceps with Straight Blades.

Weight 14¾ oz. (413.5 grms.); length 12¾ in. (32.43 cm.); length of blades 8½ in. (21.5 cm.); breadth of do. 1¾ in. (4.4 cm.); breadth

across do. 3 in. (7.6 cm.); distance betwen tips $\frac{3}{4}$ in. (2 cm.); length of fenestræ 4 in. (10.16 cm.); breadth of do. $1\frac{1}{4}$ in. (3.17 cm.).

"S. Maw and Son, London."

Each limb is forged in one piece, the handles are coated with smooth wood, the palm-rest is big; there is no flange or finger-rest and no shoulder, excepting the projecting upper border of the wooden coating. English lock.

This instrument may be compared with the heavy-handled modification of Ramsbotham's forceps introduced by Simpson, who also made the handles longer. In this sample the length of the whole forceps and the proportion of the handles of the bladers correspond precisely to Ramsbotham's description and drawings in his "Obstetric Medicine and Surgery," 5th ed., p. 246. But in this instrument the blades are straight, whilst Ramsbotham thought that the pelvic curve was "a useful addition to the long forceps." This forceps weighs $14\frac{3}{4}$ oz.; on the other hand, the "whole instrument weighs twelve ounces and a quarter," according to Ramsbotham's description of his type. In that author's drawing the shoulder of each handle is made of everted metal, as in Simpson's modification, here preserved; in this instrument the rudimentary shoulder is much simpler; Blundell's forceps was sometimes made with a flange or finger-rest on its handle.

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23A. **Ramsbotham's Forceps, Original Pattern** 1862.

Weight 12 oz. (340 grms.); length $12\frac{3}{4}$ in. (32.43 cm.); length of blades $8\frac{1}{2}$ in. (21.5 cm.); breadth of blades $1\frac{3}{4}$ in. (4.4 cm.) near tips; breadth across blades $2\frac{7}{8}$ in. (7.3 cm.); distance between tips 1 in. (2.5 cm.); length of fenestræ $4\frac{1}{2}$ in. (11.4 cm.); breadth $1\frac{1}{4}$ in. (3.17 cm.).

"Coxeter."

This forceps precisely corresponds to that figured and described in Ramsbotham's "Principles and Practice of Obstetric Medicine and Surgery," 5th ed., 1867, p. 296.

Dr. F. H. Ramsbotham laid stress on the long straight shanks which prevented laceration of the perineum, an accident which he believed was liable to occur when Osborn's, Smellie's, or Haighton's forceps was used. The shanks were of the same depth through their whole length, "so that each blade may slip along within the groove of the other, from end to end of the shank" (*loc. cit.*, p. 297). Ramsbotham particularly insisted that the blades be slightly convex on the inner side.

The measurements, so far as they are noted by the author, are identical with those given above, but Ramsbotham states that his

forceps weighed 12¼ oz. (347 grms.). Sir J. Y. Simpson made the handles heavier and added Busch's finger-rest. See notes to No. 23.
W. Dunnett Spanton, Esq., 1914.

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23. **Ramsbotham's Forceps, Simpson's Modification.—I.**

Weight 1 lb. 1¾ oz. (503.5 grms.); length 13½ in. (34.3 cm.); length of blades 8½ in. (21.5 cm.); breadth of blades 1¾ in. (4.4 cm.) near tips; breadth across blades 3½ in. (8.87 cm.); distance between tips 1⅛ in. (2.85 cm.); length of fenestræ 4 in. (10.16 cm.); breadth 1¼ in. (3.17 cm.). "Wood, Manchester."

Each limb is forged in one piece, the handles are coated with chequered wood, the palm-rest is big, there is no finger-rest, but a shallow shoulder is formed by everted metal along the upper border of the wooden coating. English lock.

The shanks are long, running almost parallel for 1½ inches (3.8 cm.). The blades have a distinct pelvic curve, their inner surfaces are slightly flattened and the edges of the fenestræ very convex.

Ramsbotham's typical forceps measured 12¾ inches (32.43 cm.), the blades being 8½ inches (21.5 cm.) long. In this sample the blades are of the same length, but the handles are 5 inches (12.7 cm.) long, whilst in the type they were only 4¼ inches (10.7 cm.) long. The type weighed 12¼ oz. (347 cm.); this sample weighs 1 lb. 1¾ oz. (603.5 grms.). Ramsbotham adds in a footnote, "The form and dimensions of this instrument are now generally adopted and known as 'the long forceps' from the fact of the learned Professor Simpson being in the habit of using blades of the same make with handles of a heavier kind, though I had published a description and delineation of it so long ago as the year 1834."

This instrument has "handles of a heavier kind" than in Ramsbotham's type. There are no flanges or finger-rests, as in Simpson's long forceps, where there were deep finger depressions along the handle instead of a distinct palm-rest. Oldham's had the long shanks and the finger-rests, but no palm-rests, the handles being smooth. As the finger-rests or flanges were invented long before Simpson's long forceps (see description No. 14, D. W. Busch's, and No. 26, Simpson's long forceps) in this collection, so the long shanks with a space between them were already introduced by John Evans of Oswestry and by Aitken before 1784 (see note to No. 26).

Numerous modifications, mostly very trifling, of Ramsbotham's forceps were sold by dealers and used in practice when this type of instrument was popular. *Royal Society of Medicine.*

24. Ramsbotham's Long Forceps, Simpson's Modification.—II.

Weight 1 lb. ½ oz. (468 grms.); length 14 in. (35.6 cm.); length of blades 8½ in. (21.5 cm.); breadth of do. 2⅛ in. (5.4 cm.); breadth across 3 in. (7.6 cm.); distance between tps 1 in. (2.5 cm.); length of fenestræ 5 in. (12.7 cm.); breadth of do. 1½ in. (3.8 cm.).

"Dr. Radford, 1825; R. Westbury, Old Mill Gate, Manchester."

This instrument closely resembles the preceding forceps (No. 23), being of the Ramsbotham type, but with longer and heavier handles, a variation to which that authority took exception (see note, No. 23). The wood of the handles is smooth. In this forceps the inner surface of the blades are flat, not convex, as in the typical forceps described and figured in Ramsbotham's Text Book.

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25. Sir James Simpson's Short Forceps.

Weight 9½ oz. (269 grms.); length 9½ in. (24.1 cm.); length of blades 7 in. (17.7 cm.); breadth of do. 1⅜ in. (3.5 cm.); space between extremities of closed blades ¼ in. (6.35 cm.); greatest breadth across blades 2⅜ in. (6 cm.), near free end; length of fenestræ 3⅞ in. (9.8 cm.); breadth of do. ⅞ in. (2.2 cm.).

"S. Maw and Son, London."

Handles only 2½ in. (6.35 cm.) long, lined with a very thick and convex layer of roughened ebony; no palm-rest and no shoulder or flange or finger-rest (see No. 26). English lock.

Figured in the Cat. Obstet. Soc., 1866, p. 103: "The handles are very short, and when locked the shanks of the blades are so apart that the finger can be placed in the space between them to facilitate the process of extraction."

The inner surface of each blade is almost flat; no pelvic curve.

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26. Sir James Simpson's Long Forceps.

Weight 1 lb. 1¾ oz. (503 grms.); length 1 ft. 2 in. (35.6 cm.); length of blades 8½ in. (21.5 cm.); breadth of do. 1¾ in. (4.4 cm.); greatest breadth across blades 3⅜ in. (8.5 cm.); distance between tips ¾ in. (1.95 cm.); length of fenestræ 4¾ in. (12.1 cm.); breadth of do. 1¼ in. (3.17 cm.).

"S. Maw and Son."

Handles lined with ebony, smooth but with deep finger depressions; no distinct palm-rests. The steel or inner part of the handles is fluted on the side corresponding to the concavity of the pelvic curve of the blades. Finger-rests or flanges very broad. English lock; shank with metal cut out.

As in Simpson's short forceps, the shanks of the blades part considerably above the lock to allow the finger to be placed between them. The inner surface of each blade is flat, sloping towards the thick and rounded edge of the fenestræ. The pelvic curve is marked.

N.B.—In Catal. Obstet. Soc., 1866, p. 103, this sample is described: "Sir James Simpson's long forceps are here shown (fig. 88). The peculiarities are seen in the shape of the handles, and in the hook at the top of each for the fingers to aid in extraction."

The finger-rest or flange, so often associated with Simpson's forceps, was introduced many years before the days when that obstetrician flourished; by J. D. Busch (see note to No. 14, D. W. Busch's forceps). Kilian ("Armamentarium") figures several old forceps besides those designed by J. D. and D. W. Busch with the finger-rest, namely, Fries', Pl. xxiv, where the "rest" is almost precisely as in Simpson's, and where there are similar finger-depressions on the sides of the handles, also Müller's (Pl. xxv), and Naegele's and Hüter's (Pl. xxviii). In Schöller's (Pl. xxxii) the finger-rests are jointed as in Levy's, preserved in this collection, No. 51. Osiander and Kilian placed the flanges in the middle of the handles; in Kilian's they were jointed, as in Schöller's.

The deep finger-depressions on the handles instead of the palm-rest, are first indicated in Brünninghausen's forceps (Kilian, "Armamentarium," Pl. xxiii) and in Fries's (*ib.*, Pl. xxiv), introduced at the beginning of the nineteenth century.

In the forceps devised by Evans, of Oswestry, made public in 1784, there appear for the first time shanks diverging at the lock and then running upwards almost parallel for over an inch (Mulder, "Historia," p. 68 and Pl. v, figs. 7 and 8); but Aitken, of Edinburgh (*ib.*, p. 69 and Pl. v, fig. 11), in the third edition of his "Principles of Midwifery" (1786), figures his own forceps with a space between the shanks, and a screw in the handles. He accuses "a Dr. Evans, of Shropshire," of passing off the screw as his own invention, but does not imply that Evans adopted the shanks from his (Aitken's) forceps. An elementary finger-ring is seen in Mulder's drawing (*loc. cit.*, Pl. vi, fig. 11) of Van de Laar's second forceps. (See notes to No. 37, "Greenhalgh's short straight forceps.")

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27. **Sir James Simpson's Long Forceps.—II.**

A similar instrument, not so highly finished; the lock is of the simplest type. The steel forming the inner part of the handle is roughly chequered on the side corresponding to the concavity of the pelvic curve of the blades. "Matthews, London."

Penrose Williams, Esq., 1912.

28. Sir James Simpson's Long Forceps, with Bronze Blades.

Weight 1 lb. 5½ oz. (610 grms.); length 1 ft. 1½ in. (34.3 cm.); length of blades 8 in. (20.3 cm.); breadth of do. 1¾ in. (4.4 cm.); greatest breadth across do. 3¼ in. (8.2 cm.); distance between tips 1 in. (2.5 cm.); length of fenestræ 4¼ in. (10.7 cm.); breadth of do. 1¼ in. (3.17 cm.); marked "Krohne & Co., London."

A highly-finished instrument with bronze blades lined with smooth ebony with deep finger depressions and no distinct palm rest. The bronze or inner part of the handle is smooth, being neither fluted nor chequered. Finger-rests wide. English lock, but with the clip omitted on the handle of the right blade. Characteristically long, almost parallel shanks, with wide space between them. *Royal Society of Medicine.*

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29. Naegele-Rigby Forceps: German (Brünninghausen's) Lock.

Weight 1 lb. (454 grms.); length 14 in. (35.6 cm.); length of blades 7½ in. (19 cm.); breadth of do. 1¾ in. (4.4 cm.); greatest breadth across blades 3 in. (7.6 cm.); space between tips when closed ½ in. (1.2 cm.); length of fenestræ 5 in. (12.7 cm.); breadth of do. 1¼ in. (3.17 cm.). "Ferguson."

The handles are coated with smooth ebony and there is a big palm-rest, but no finger-rest and hardly any shoulder. A pivot with a flat head, ¾ ins. (1.9 cm.), vertical measurement, by ½ in. (1.27 cm.) broad, is fixed into a mortise or notch over half an inch deep (1.27 cm.) in the border of the corresponding part of the right limb.

The blades have no distinct shanks, the pelvic curve is marked, the fenestræ long, and the inner surfaces flat, sloping to the edges of the fenestræ.

Dr. Rigby wrote in 1841:—"The most perfect lock is that of Professor Brünninghausen of Würzburg, first introduced by ourselves into this country and commonly known among instrument makers under the name of Professor Naegele's forceps. One shank of one blade has a semi-circular indentation, which at the moment of locking fits into a fixed pivot in the other; this therefore combined the advantages of the French and English locks." Rigby: "A System of Midwifery," p. 137, in "Tweedy's Practical Medicine," vol. vi, 1841.

The typical Naegele's forceps bore a finger-rest and the handles were shorter than those of this instrument.

Royal Society of Medicine.

30. T. E. Beatty's Medium Forceps.

Weight $10\frac{3}{4}$ oz. (304.5 grms.); length 1 ft. $\frac{1}{2}$ in. (31.75 cm.); length of blades 8 in. (20.3 cm.); breadth of blades $1\frac{3}{8}$ in. (3.5 cm.); length of fenestræ $5\frac{1}{4}$ in. (13.3 cm.); breadth of do. 1 in; space between extremities of closed blades $1\frac{1}{8}$ in. (2.85 cm.); greatest breadth across blades $3\frac{1}{4}$ in. (8.2 cm.).

"Thompson and O'Niell."

Handles lined with roughened ebony, big palm rest, no finger-rest; broad sloping shoulder formed by upper border of wooden lining. English lock.

This is practically a Denman's forceps with long, slender blades (see below), broadest near the extremities with no distinct shank and with a clear space between the tips when the handles are closed. There is no pelvic curve. It is described and figured in Thomas Edward Beatty's "Contributions to Midwifery, No. iv, Cases illustrative of the use of the Forceps," in the *Dublin Journal of Medical Science,* vol. xxi (1842), p. 337, and in the same author's "Contributions to Medicine and Midwifery" (1866), pp. 48, 116. The measurements (p. 361) correspond to those given above. Beatty describes the forceps as "the form of instrument most suited, in my mind, to those cases in which the head is arrested in the pelvis before it has come down to touch the perineum. In such a position a longer instrument than that in common use will be found of great advantage." Beatty gives the measurements and maintains that the blades, being narrow, can be easily introduced and the handles readily locked. As the blades are long, the lock will lie well outside the vagina. "The sides of the blades enclosing the fenestræ are nearly round, slightly flattened on the inner and outer surfaces but having no sharp edge either on the outer border or the margin of the fenestra," Beatty having noted that most forceps "that are found at the cutler's are finished with such sharp edges that both mother and child are in danger of being injured by their use." In the Cat. Obstet. Soc., 1866 (p. 90), it is stated "Dr. Beatty's straight forceps are remarkable for their lightness, weighing only 11 oz., for the length of their blades, and for the slenderness of the arms of the fenestræ, which are not rounded, internally, so that their strength is not impaired."

This instrument weighs less than eleven ounces (see note to No. 8). Murphy's modified Beatty's forceps is exhibited in this collection, No. 43. Murphy's drawing of T. E. Beatty's forceps in his "Lectures on the Principles and Practice of Midwifery," 2nd ed., 1862, p. 264, fig. 105, appears to have been taken from this instrument, as the wooden lining is fitted on to the handle by two screws on the inner surface. In T. E. Beatty's own drawing

(*loc. cit.*), there are three screws passing from the outer side through the wood. Otherwise the forceps in Beatty's illustrations correspond to this instrument; the prominent sloping shoulders are very characteristic. Dr. Robert Barnes, in his "Lectures on Obstetric Operations," 1870, admitted (p. 49) that "the best single curved forceps is that of Dr. Beatty," nevertheless Barnes had given it up, preferring the long forceps.

Note.—T. E. Beatty's forceps must not be confounded with his father's (John Beatty's). "The instrument I (John Beatty) have always used is that which is called male and female from the transverse opening in the root of one blade through which the other is passed." ("Observations on the use of instruments in cases of difficult and protracted labour," read before the Association of the College of Physicians, 1829, by John Beatty, republished in T. E. Beatty's "Contributions.")

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30A. **Clark's Forceps** (*circ.* 1850).

Weight 10½ oz. (300 grms.); length 11½ in. (29.2 cm.); length of blades 6½ in. (16.5 cm.); breadth of blades near tips 1⅝ in. (4.12 cm.); greatest breadth across blades 3 in. (7.6 cm.); distance between tips when closed 1 in. (2.5 cm.); length of fenestræ 5 in. (12.7 cm.); breadth 1 in. (2.5 cm.). No maker's name.

A short curved forceps, each limb forged out of one piece of steel, nickel-plated, handles lined with smooth ebony, and greatly flattened antero-posteriorly; in breadth they measure together when closed 2 in. (5 cm.) at the free end of their palm-rest, and taper upwards so as to be hardly ¾ in. (2 cm.) broad at the lock, where there is no shoulder. The inner surface of the left handle at the level of the palm-rest bears a stout blunt pin, fitting into a hole in the corresponding portion of the opposite handle. The blades have no shanks, but bear a marked pelvic curve, their inner surfaces, which border the fenestræ, are perfectly plane, and their edges are well rounded.

Clark's instrument was one of the very light short forceps in use in the middle of the 19th century, where the blades bore a pelvic curve. The patterns of many forceps sold by dealers as "Clark's" were not quite uniform. The pelvic curve sufficiently distinguished it from Denman's better known instrument, a short forceps with straight blades (No. 11).

W. Dunnett Spanton, Esq., 1914.

31. **Eduard Martin's Forceps.**

Weight 1 lb. 8¼ oz. (688 grms.); length 14¼ in. (36.2 cm.); length of blades 8 in. (20.32 cm.); breadth of do. 1⅞ (4.75 cm.); greatest breadth across do. 3⅜ in. (8.5 cm.); distance between tips when closed ¾ in. (2 cm.); length of fenestræ 4½ in. (10.7 cm.); breadth 1¼ in. (3.17 cm.). No maker's name.

This forceps was avowedly made of medium size by its designer, small enough to be easily packed in a kit, yet long enough to be serviceable when the head is high in the pelvis. Each limb is made of one piece of metal, and the handles are coated with smooth wood. The palm-rest is quite of the English type; the lock is also English, but with the clip omitted on the right blade (as in D. W. Busch's forceps, No. 14), and each handle bears a wide finger-rest.

Blades thick and heavy, with strong pelvic curve, shanks flattened antero-posteriorly, parting from each other at an angle of 45°, and joining the blades without any distinct limits. Edges of blades very thick and rounded, inner surfaces distinctly concave. Lower end of each fenestra rounded off, for application of tapes or towels for traction purposes.

This instrument, figured in Eduard Martin's "Hand Atlas für Gynäkologie und Geburtshülfe," 1861, Pl. lxxi, figs. 1 and 2, was originally figured and described in that obstetrician's "Die Gebäranstalt und die geburtshülflichen Kliniken der Universität, Jena," 1848, p. 79 and Pl. iii. Martin introduced this forceps in 1839, and employed it regularly in the Jena Maternity Department. He made the handles shorter than in most long forceps of his time, only, as he stated, of sufficient length to hold the fœtal head firmly without undue pressure. The flanges or finger-rests were for the operator's fore and ring fingers, the gap between the shanks for his middle finger (see note to No. 14, D. W. Busch's forceps). Martin adopted the English lock, but without a clip on the handle of the right blade. "Above all, the borders of the forceps are carefully rounded and polished so that neither the mother, the child, nor the operator can suffer injury when the instrument is properly used." *Royal Society of Medicine.*

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32. **Radford's Straight Long Forceps with Asymmetrical Blades.**

Weight 11½ oz. (326 grms.); length, handle and long blade, 14 in. (35.6 cm.); length of long blade 10½ in. (26.6 cm.); of short blade 9½ in. (24.1 cm.); breadth of long blade (near tip) 2¼ in. (5.7 cm); of short do. near tip 2⅛ in. (5.4 cm.); greatest breadth across blades 3 in. (7.6 cm.); length of fenestra, long blade, 5¾ in.

(14.6 cm.); breadth of do. $1\frac{5}{8}$ in. (4.12 cm.); length of do., short blade, $5\frac{1}{4}$ in. (13.3 cm.); breadth of do. $1\frac{1}{2}$ in. (3.8 cm.); tips of blades when closed $\frac{3}{4}$ in. (1.9 cm.) apart.

"Thomas Radford" cut in metal of handle of shorter blade, half effaced—no maker's name.

Each limb is forged out of one piece of metal, handles very short, $3\frac{1}{2}$ in. (8.8 cm.), lined outside with ebony; palm rest, no flange or finger rest, or shoulder. English lock reversed.

The blades bear shanks $3\frac{1}{2}$ in. (8.87 cm.) long; with a wide finger-ring immediately above the lock (after Hopkins, see note to No. 37). The inventor says:—"The peculiarities of this instrument are the long and short blade, the former to be placed over the face, the latter on the occiput of the infant. It is sufficiently long to be applied on the head when it is lying on or just entering the brim of the pelvis. The shortness of the handles renders compression of the infant's head quite impossible. Its construction is adapted more especially to that of a powerful tractor. The oblong opening formed by the curve in the shank of each blade is for the purpose of passing a silk handkerchief through, and will enable the practitioner, in addition to his hold of the handles, to use very powerful and effective extractive force. The reverse position of the locks supersedes the necessity of all contrivances, such as screw or hinge, between the handle and that blade which (according to the usual construction) is placed on the upper side of the pelvis, and is the one to be the last introduced. Whereas the position of the lock in this instrument requires that the upper blade (assuming the woman lies on the left side) should be first introduced." (Cat. Obstet. Soc., 1866, p. 99, and figs. 80, 81). In the asymmetry of the blades, the longer being designed for the face and the shorter for the occiput, this instrument resembles David Davis's asymmetrical long forceps. The lock is best displayed in the next specimen.

This sample has been freely used, so that the name on the handle is half effaced. *Royal Society of Medicine.*

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33. **The Short Blade of Radford's Straight Long Forceps.**

Showing the reversed lock. See description of the complete forceps. Weight $5\frac{1}{2}$ oz. (156 grms.). As the broad end of the blade served well for the purpose it was often used as a vectis, in the middle of the nineteenth century.

Dr. Radford, 1871.

34. Radford's Long Curved Forceps with Symmetrical Blades.

Weight 1 lb 2¼ oz. (518 grms.); length 1 ft. 2½ in. (36.8 cm.); length of blades 8½ in. (21.5 cm.); greatest breadth (near tip) of do. 2 in. (5 cm.); greatest breadth across do. 2½ in. (6.35 cm.); space between tips when closed ⅜ in. (0.9 cm.); length of fenestræ 5 in. (12.7 cm.); breadth of do. 2 in. (5 cm.).

"R. Westbury, Old Mill Gate, Manchester."

Each limb is forged out of a single piece of metal. When the lock (English type) is closed the handles, which are lined outside with ebony, do not lie in contact with each other. No shoulder, nor flange or finger rest.

The shanks are one inch and a half (3.8 cm.) long, almost parallel, but with no space for the forefinger. Blades with pelvic curve. "The inventor states that the object of the parallel shanks is to prevent injurious stretching of the perineum and risk of laceration of the pelvic structures." Cat. Obstet. Soc., 1866, p. 100, and figs. 82, 83. (N.B.—The fenestræ are much longer in the instrument here exhibited than in that represented in figs. 82, 83.)

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35. Waller's Forceps (Long, Straight).—I.

Weight 14 oz. (397 grms.); length 14 in. (35.6 cm.); length of blades 9 in. (22.8 cm.); breadth of do. 2 in. (5 cm.), near tip; breadth across 3 in. (7.6 cm.); distance between tips when closed ¾ in. (2 cm.); length of fenestræ 3¾ in. (9.5 cm.); breadth 1¾ in. (3.5 cm.).

"Ferguson, London."

An instrument resembling Blundell's, but with the handles much more slender, without finger-rests or shoulders of any kind; the long parallel shanks (2 in. or 5 cm.) not so far apart, the blades wider and the fenestræ as in Churchill's forceps, rather short. The inner side of the blades is perfectly flat.

Waller (of St. Thomas's Hospital) does not describe or figure his forceps either in his "Elements of Practical Midwifery or Companion to the Lying-in Room," London, 1852, or in his edition of Denman's "Introduction to Midwifery."

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36. Waller's Forceps.—II.

Similar to Waller's Forceps I, being of the same length (14 in. or 35.6 cm.), the blades taking up 9 in. (22.8 cm.) but more solidly

made, the weight being 16½ oz. (468 grms.), and the blades stouter. They bulge out more freely from their shanks.

"W. Matthews, 10, Portugal Street, London."

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37. Greenhalgh's Short Straight Forceps.

Weight 11¾ oz. (333.5 grms.); length 1 ft. (30.48 cm.); length of blades 7½ in. (19 cm.); breadth of do. 1⅞ in. (4.75 cm.); of fenestræ 1⅜ in. (3.5 cm.); space between extremities of closed blades ⅞ in. (2.3 cm.); greatest breadth across blades 2⅞ in. (7.3 cm.); they are of almost uniform breath; length of fenestræ 4½ in. (11.4 cm.); breadth of do. 1¼ in. (3.17 cm.). "S. Maw and Son, London."

Handles lined with smooth ebony, palm-rest, no finger-rests.

The shanks, although not widely divergent, are bent strongly outwards so as to form a finger-ring, afterwards adopted by Barnes. The cephalic curve is sharp and the fenestræ wide; the blades are flat on their inner surfaces.

In the Cat. Obstet. Soc., 1866, this forceps and a short curved and also a long curved forceps, all of Greenhalgh's design, are described and figured (p. 92 and fig. 70), but in all three "the handles are short and of roughed ivory" with an unusually deep palm-rest (compare Sir J. Y. Simpson's short forceps, No. 25, where the very short handles have no palm-rest). Greenhalgh adds that the shortness is "compensated for by a ring for the insertion of the finger or towel, by the end of which any amount of justifiable extractive force can be exerted." In Greenhalgh's long forceps the shank was prolonged considerably beyond the ring. It would appear that the handles were found to be too short and liable to cause injury to the soft parts, so that as in Lowder's modification of Orme's instrument, the handle was subsequently lengthened, as in this sample. In the tables (Cat. Obstet. Soc., 1866, p. 76) the length of the short straight forceps is given as 11 in. (28 cm.); of its blades 7⅝ (19.3 cm.); the handle being only 3⅜ in. (8.5 cm.).

Grenhalgh claimed "that his instruments are strong, light and wieldy, and suited to any and all cases requiring the aid of forceps." In the short forceps the blades are not as in the long instrument, broadened at their free ends. "The fenestræ are sufficiently open at their lower extremities to admit of the protrusion of a small portion of the scalp and even bone, as in Dr. D. Davis's forceps, so that there is little or no addition made to the size of the head, and a firmer hold is thereby obtained; besides which the soft parts of the child are permitted to come in contact with the soft parts of the mother, thus preventing all risk of bruising during extraction.

The blades are rounded out internally, and well adapted to grasp firmly a spherical or ovoid body."

The finger ring present in Radford's (No. 32) and generally associated at the present time with Barnes's[1] forceps, is first seen in its simplest form in the second forceps designed by Van de Laar (1777) figured in Mulder's "Historia Forcipum," Pl. vi, figs. 11 and 12, where the round gap is narrow and probably meant rather for a tape than for the finger. In 1828 Ashwell, in his "Practical Treatise on Parturition," figures and describes (Pl. xiii, fig. 3 and p. 545) Dr. Hopkins' forceps, which bears a larger finger ring. "*The most valuable peculiarity* of this instrument consists in a *considerable curve* in each handle, adapted to receive the forefinger of the operator, by which finger the principal part, or the whole of the extracting force may be applied."

Joseph Hopkins himself, however, in his "Accoucheur's Vade Mecum," 6th ed., 1819, vol. ii, p. 56, figures a short forceps only, of the Denman type, without shanks, but refers to another kind of forceps "denominated the double curved." Ashwell describes how in Hopkins's forceps the lock is made on the reverse side, so that the upper blade may be introduced first, and how the inner side of the extremities of the blades is slightly convex, while he implies that the finger ring is a new invention.

No forceps with a finger ring is figured in Kilian's "Armamentarium" (1856). See notes to No. 26, Simpson's long forceps.

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38. **Straight Long Forceps. Designer Unknown.**

Weight 11¼ oz. (320 grms.); length 12 in. (30.5 cm.); length of blades 7½ in. (19 cm.); width of do. 1⅞ in. (4.75 cm.), near base; greatest breadth across blades 2¾ in. (7 cm.); distance between tips when closed 1 in. (2.5 cm.); length of fenestræ 3¾ in. (9.5 cm.); breadth of do. 1⅛ in. (2.85 cm.); length of shanks 2 in. (5 cm.); widest space (uppermost part) between shanks 1 in. (2.5 cm.). "Mackenzie."

Handles long, coated with smooth ebony, big palm rests, no flange or finger rest, the upper limit of the ebony lining forms a shallow shoulder. English lock.

1. "Barnes's Forceps.—The inventor states 'the ring formed by the union of the blades gives advantage of additional grasp, so that the two handles may be used *together or alternately*. The ring virtually lengthens the handle. The parallel shanks further give power by their length, and obviate all stretch on the perineum.'" Cat. Obstet. Soc., 1866, p. 90. The above paragraph is of interest, as Dr. Barnes was President of the Obstetrical Society in 1866; and one of the compilers of the Catalogue.

This is an old type of straight, long forceps, apparently earlier than Blundell's. The blades, narrowest at the tips and perfectly flat on their inner surface, resemble those of the Orme-Lowder instruments, but the shanks are very long and convex outwards, suggesting a compromise between the Ramsbotham-Simpson parallel shanks, originally made by Evans of Oswestry or Aitken, and the Greenhalgh and Barnes finger-ring, originally devised by Hopkins (see No. 37), although indicated in Van de Laar's second forceps. It bears a considerable resemblance to Greenhalgh's forceps, but the fenestræ are narrower and the finger ring is rudimentary.

In Maw and Thompson's Book of Illustrations to their Quarterly Price-Current, Jan. 1870, a similar instrument is figured as "Lever's," together with another more often associated with Lever's name. *Royal Society of Medicine.*

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39. **Churchill's Forceps.**

Weight 11 oz. (312 grms.); length 1 ft. $\frac{1}{4}$ in. (31.1 cm.); length of blades $7\frac{1}{2}$ in. (19 cm.); breadth near extremities $3\frac{1}{4}$ in. (8.2 cm.); length of fenestræ $3\frac{1}{4}$ in. (8.2 cm.); breadth 1 in. (2.5 cm.); space between extremities of closed blades 1 in. (2.5 cm.); greatest breadth across blades $3\frac{1}{4}$ in. (8.2 cm.). "S. Maw and Son, London."

Handles lined with smooth ebony, big palm-rest; they taper towards lock with no trace of finger rest or shoulder.

The blades are long and slender, parting at the lock without any distinct shank, the cephalic curve is increased towards the point. There is no pelvic curve. Their inner surfaces are slightly convex, not flat. The fenestræ, though wide, are conspicuously shorter than in most similar forceps, so that the lower part of the blades is much stouter. This feature, together with the peculiar curve and the total absence of any shoulder or flange, distinguishes the "Churchill" type of forceps.

In 1841 Churchill wrote ("Researches on Operative Midwifery," p. 128): "For myself, I prefer the long or short forceps with the single curve, with the blades and fenestra (*sic*) somewhat narrow, and approximating so as to allow of a firm degree of pressure; with their edges smoothly levelled off; and the blades sufficiently strong to prevent their springing, but not so thick as to add unnecessarily to their bulk." In the fourth edition of his "Theory and Practice of Midwifery" (1860), p. 339, and fig. 77, Churchill observes: "Since the first edition of this work, I have taken some pains to modify the shape and proportions of the short forceps . . . . . I still prefer the single curved forceps. The length should be 12 inches, of which the handles occupy 4.

The intervals between the points of the blades when closed should be 1 inch and at the widest part of the curve 3 inches. The breadth of each blade at the widest part should be 1 inch, the fenestra $2\frac{1}{2}$ or 3 inches long, having the lower part of the blade solid steel, to give greater firmness. The curve of the instrument should not commence for fully $3\frac{1}{2}$ inches above the handle, and will consequently be much increased towards the point. Lastly, the edges of the blades and fenestra must be nicely bevelled off. The advantages I have found from these changes are an increase of tractile power without the necessity of grasping the handles so tightly and compressing the head; the exact fitting of the head into the hollow formed by the curves, so as to avoid distending the perineum by a part of the instrument not actually of use, and the prevention of springing and slipping by the solidity of the lower part of the blades.'' In this sample, the curve of the blades is not quite so abrupt and the fenestræ are a little longer than in Churchill's standard instrument above described.

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40. **Graily Hewitt's Forceps.—I.**

Weight $13\frac{1}{2}$ oz. (383 grms.); length 1 ft. $\frac{1}{2}$ in. (31.75 cm.); length of blades 8 in. (20.3 cm.); breadth (near extremity) $1\frac{1}{2}$ in. (3.8 cm.); length of fenestræ $4\frac{3}{4}$ in. (12.1 cm.); breadth 1 in. (2.5 cm.); space between extremities of closed blades $\frac{7}{8}$ in. (2.2 cm.); greatest breadth across blades $3\frac{1}{8}$ in. (7.9 cm.). "J. W. Wood, Liverpool."

Handles lined with smooth ebony, big palm-rest, no finger-rest or flange, no shoulder. English lock.

The blades are long and narrow with no shank and with an unusually wide curve, to be adapted to a highly-elongated fœtal head. The inner surface is quite smooth and flat. This forceps corresponds precisely, save that its handles are smooth, with the full-size drawings accompanying Graily Hewitt's original description in his paper "On Unusual Elongation of the Fœtal Head as a Cause of Difficulty in the application of the Ordinary Obstetric Forceps; with a Description of a Modified Form of Instrument to be used in such cases." *Trans. Obstet. Soc.*, vol. iii, 1861, p. 180. "It only differs from the common straight forceps in use in this country in having longer blades and in the blades themselves having a different curve. The length of the blade is 8 inches, instead of $6\frac{1}{2}$ or 7, and the curve is an arc of a circle of 14 inches in diameter, instead of 10 or 11. The instrument when locked is fitted to enclose a larger oval than the ordinary forceps."

In the Cat. Obstet. Soc., 1866, p. 94, it was stated: "The

inventor claims for his instrument greater facility of introduction and better adaptation to the fœtal head than can be secured by the ordinary forceps in cases where, from severe labour, the occipito-mental diameter is much elongated."

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41. **Graily Hewitt's Forceps.—II.**

Weight 13 oz. (368 grms.); length 1 ft. (30.48 cm.); length of blades $7\frac{1}{2}$ in. (19 cm.); breadth $1\frac{3}{4}$ in. (4.4 cm.); space between extremities of closed blades $\frac{7}{8}$ in. (2.2 cm.); greatest breadth across blades $3\frac{1}{4}$ in. (8.2 cm.); length of fenestræ $4\frac{5}{8}$ in (11.74 cm.); breadth $1\frac{1}{4}$ in. (3.17 cm.). "S. Maw and Son, London."

Handles lined with roughened ebony, big palm-rest, no finger-rest or flange, and no shoulder. English lock.

This instrument was labelled "Forceps, Graily Hewitt," in the museum of the Obstetrical Society. It does not correspond precisely with the drawing accompanying Graily Hewitt's original description, being shorter, with broader blades, thicker and wider around fenestræ, whilst the curve is narrower.

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42. **Kristeller's Dynamometrical Forceps.**

Weight 1 lb. $13\frac{1}{2}$ oz. (837 grms.); length $15\frac{1}{2}$ in. (39.3 cm.); length of blades 9in. (22.8 cm.); greatest breadth of ditto $1\frac{3}{4}$ in. (4.4 cm.) near tips; greatest breadth across blades $3\frac{1}{4}$ in. (8.2 cm.); distance between closed tips $\frac{3}{4}$ in. (19.5 cm.); length of fenestræ 5 in. (12.7 cm.); breadth of ditto 1 in. (2.54 cm.). "Lutter, Berlin."

A long forceps, with the Brünninghausen, or German lock, the pivot made "untrue" to allow of the utilizing of the metre scale on the handles. The metal of each handle is covered outside with a movable wooden portion bearing a palm-rest below and a flange or finger-rest above, whilst between them the outer surface is coated with brass.

Each of the wooden handles has a slide-catch immediately under the finger-rest, which, when drawn back, (*i.e.*, unlocked) allows the handle to be brought down to the desired degree. When the grasp is released, the handle returns automatically to its normal position by means of a spring concealed in its interior. On the inner side of the handle of the left blade, a sliding-block with a stop is fitted; this block can be moved to the level of the mark on the scale indicating the desired degree of pressure. The slide catch having been released, the handles can be drawn down to the extent of the scale exposed by the sliding block. A small fixed

block higher up on the handle arrests the action of the sliding-block, thus showing when the limit has been attained. On the inner side of the handle of the right blade is a fixed block to allow of the free working of the sliding-block on the opposite side, and a screw on the inner side of each handle near its extremity serves the same purpose.

The blades bear a strong pelvic curve and are stout and slightly convex on their inner surfaces, the fenestræ are relatively short and narrow. The lower half of each blade is marked with a centimetre scale to indicate, when traction is made and the head is low in the pelvis, the depth to which the blades are inserted. "Zur Kontrole der Raumtheile um sich die Zange aus dem Becken herausbewegt."

This forceps is fully described by Dr. Kristeller, the inventor, in a contribution entitled "Dynamometrisch Vorrichtung an der Geburtszange," in Credé's *Montsschrift f. Geburtskunde,* vol. xvii, 1861, p. 166 and plate 240. Though there is no note of the fact in the *Trans. of the Obstet. Soc. of London,* "Kristeller, as I can witness, presented this instrument to the Society." (Letter from Professor August Martin, March 1913).

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43. **Murphy's Medium Forceps (Modified T. W. Beatty).**

Weight 10 oz. (283 grms.); length 1 ft. $0\frac{1}{2}$ in. (31.75 cm.); length of blades $7\frac{1}{2}$ in. (19 cm.); breadth $1\frac{3}{4}$ in. (4.4 cm.); breadth of fenestræ $1\frac{1}{4}$ in. (3.17 cm.); space between extremities of closed blades $\frac{7}{8}$ in. (22.19 cm.); greatest breadth across blades $3\frac{1}{4}$ in. (8.2 cm.).

"S. Maw and Son, London."

Handles lined with smooth ebony, big palm-rest, no finger-rest or flange, nor shoulder. English lock.

The shanks of the blades run upwards, almost parallel, with a space between them as in Evans', Aiken's and Simpson's forceps. Murphy ("Lectures on the Principles and Practice of Midwifery," 1862) figures this forceps, p. 364, fig. 106, as "Beatty's forceps modified," and describes and figures (fig. 105) Beatty's forceps, which he represents as identical with the instrument bearing T. W. Beatty's name in this collection (No. 30). "This instrument is well calculated for that operation which we have described as being intermediate between the operations with the long and short forceps—namely, when the head is in the cavity of the pelvis without touching the perineum." In a footnote, Murphy adds: "In this instrument we have added a shank to the blades about one inch in length, when it is necessary to introduce them high within the pelvic cavity." *Royal Society of Medicine.*

44. Gayton's Forceps.

Weight 14¾ oz. (418.5 grms.); length 1 ft. 30.5 cm.); length of blades 7½ in. (19 cm.); greatest breadth 1⅝ in. (4.12 cm.); greatest breadth across blades 3¼ in. (8.2 cm.); space between extremities of closed blades 1 in. (2.5 cm.); length of fenestræ 4½ in. (11.4 cm.); greatest breadth 2⅛ in. (3.4 cm.). "Krohnė, London."

Handle, smooth ebony, palm-rest, finger-rest or flange (not in Gayton's original drawing); at its extremity a spring rack with lock. The lock of the forceps is of the English type, with the addition of a roller to control the rack action.

Blades without shanks or pelvic curve, broadest near tips, inner surface slightly convex.

See W. Gayton, "On a New Mode of Securing the Handles of the Forceps during Delivery," *Med. Times and Gaz.*, vol. ii, 1863, p. 217, with woodcut, p. 218. It was designed to obviate the injurious effects of continued pressure on the fœtal head by a tape tied tightly round the handles when it is within the grasp of the forceps. This variety requires no tape, "when the blades are applied and the instrument locked, it may be kept at any degree of compression by simply raising the spring and allowing the end of the handle to advance or recede as desired. In this way, during the interval of pain, the pressure is in a moment taken off the fœtal head and as quickly replaced." Gayton declared that his object was "to provide a suitable means of uniting the forceps, when applied, without the incumbrance of ligatures." He presented this sample (to the handles of which he had added finger-rests not in the original pattern) to the Obstetrical Society of London in 1866. See Catal. Obstet. Soc., 1866, p. 91.

Royal Society of Medicine.

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45. Rizzoli's Long Forceps with Reversible Blades: After Tarsitani.

Weight 2 lb. 0½ oz. (922 grms.); length 1 ft. 6 in. (45.7 cm.); length of blades 9½ (24.1 cm.); breadth of do. 1⅝ in. (4.12 cm.) about *middle*; greatest breadth across do 2⅞ in. (7.3 cm.); space between tips of do. closed ⅛ in. (0.3 cm.); length of fenestra 5½ in. (14 cm.); breadth of do. ¾ in. (1.9 cm.). "Fli Lollini (Bologna)."

(This instrument, and others in this collection bearing the name of Professor Rizzoli, of Bologna, are described in his "Memorie Chirurgiche ed Ostetriche," 1869, and in Andreini's translation, "Clinique Chirurgicale: Mémoires de Chirurgie et d'Obstétrique," Paris, 1872.)

A large, heavy forceps of the Levret type with important modifi-

cations, being constructed so that either blade could be introduced first. The handles are extremely flattened antero-posteriorly, with bevelled edges; at their extremities one is everted at a right angle and the other turned up so as to form a blunt hook. The handles are superimposed, not opposed, resting in apposition. At the lock, the right or female limb is slotted to allow of a lateral deviation of the blade. The slot receives a thumb-lock attached to the male limb, made so as to revolve and fix the blades securely. In order that the blades may be used indifferently this lock bears a thumb-piece on both sides. The spanner here exhibited (45a) was used to unfix the thumb-piece when necessary. The thickness of the limb is diminished by a half in the region of the joint. The thumb-pieces can readily be introduced from before backwards, or *vice versâ*. Thus the left or male blade may be placed in front or behind of the right or female blade. There is a flange on both sides of the bases of the everted extremities of the handles so contrived that the handle may close properly whichever blade be uppermost.

Rizzoli's "Three pairs of different sizes of long double-curved forceps" were exhibited at the Obstetrical Society's Conversazione in 1866, but are very imperfectly described in the Catal. Obstet. Soc., 1866, p. 102. Thureaux, of New Orleans, invented, in 1843, *branches hermaphrodites* and *une articulation permettant d'articuler dessus ou dessous* (see Witkowski, "Arsenal Obstétrical," figs. 504, 505). In the same year Tarsitani, of Naples, introduced *forceps à double pivot permettant d'éviter le décroissement.* Professor Rizzoli, a general surgeon, was fond of inventing or modifying instruments associated with many other specialities, besides obstetrics. These forceps are essentially Tarsitani's.

Rizzoli was of opinion that by the lock arrangement the forceps can be applied by the least experienced, at any height, even before the os is completely dilated. The blades are broadest near the middle, not near the tips which are made narrow, though blunt, to be used for dilatation of the cervix. "Rizzoli is one of those few obstetricians who have ever thought of contriving a forceps which might be utilized for the dilatation of the cervix, a practice which is universally condemned (Poullet)," Charpentier, "Traité pratique d'accouchements," vol. ii, p. 688. *Royal Society of Medicine.*

45a. **Spanner or Key for Rizzoli's Forceps.**

A steel instrument $7\frac{1}{4}$ in. (18.4 cm.) long; its lower part $3\frac{1}{4}$ in. (8.2 cm.) being coated on both sides with roughened ivory. The remaining 4 in. (10.16 cm.) is bare steel, slightly convex on each

side; it bears a slot $\frac{3}{4}$ in. (1.9 cm.) long and a piece of the steel, of about the same length is cut out at the free end. "F^li^ Lollini."

This spanner is figured by Rizzoli, *loc. cit.*, No. 45. In the Catal. Obstet. Soc., Lond., 1866, p. 102, "the smallest pair" exhibited by Rizzoli was provided with a "forceps key with a terminal and central *slit* for turning the buttons of the locks."

Royal Society of Medicine.

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46. **Rizzoli's Short Forceps.**

Weight 1 lb. $9\frac{3}{4}$ oz. (730.5 grms.); length 1 ft. 4 in. (40.6 cm.); length of blades $8\frac{1}{2}$in. 21.5 cm.); breadth of do. $1\frac{5}{8}$ in. (4.12 cm.) about middle; greatest breadth across blades $2\frac{1}{2}$ in. (6.35 cm.); space between tips of blades, when closed, $\frac{1}{4}$ in. (0.6 cm.); length of fenestræ $5\frac{1}{2}$ in. (14 cm.); breadth of do. $1\frac{5}{8}$ in. (4.12 cm.).

"F^li^ Lollini."

A large heavy forceps, its blades are shorter than those of the preceding instrument. The handles are flattened, but to a less degree, and superimposed, but not reversible. The handle of the left is rectangular at its free end, that of the right is turned up to serve as a blunt hook, whilst the free ends, when closed, lie together convenient for traction. The blades are not thinner around the lock, where a slot in the female or right blade receives a thumb-lock attached to the left or male blade, the thumb-lock revolving after it has been passed through the slot, so as to fix the lock. Compare No. 5 (Levret) where the lock is similar.

As the shanks are almost entirely superimposed when the blades are closed, the available part of the blades are shorter than in ordinary forceps. The measurement of the blades, taken as in other forceps from the tips to the lock, makes them appear unusually long. The tips of the blades are, as in the long forceps, narrow, being intended to be used if thought necessary for dilatation of the cervix; see note to 45. *Royal Society of Medicine.*

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47. **Rizzoli's Modified Levret's Forceps (with Extra Blade).**

Weight 1 lb. $14\frac{3}{4}$ oz. (872.5 grms.); length 1 ft. $5\frac{3}{4}$ in. (45 cm.); length of blades $6\frac{1}{2}$ in. (16.5 cm.); breadth of do. $1\frac{1}{4}$ in. (4.4 cm.); greatest breadth across do. $2\frac{3}{8}$ in. (6 cm.) near the tip; distance between tips when closed $\frac{1}{8}$ in. (0.3 cm.); length of fenestræ $5\frac{1}{2}$ in. (14 cm.); breadth of do. 1 in. (2.5 cm.). The measurements of the extra blade are similar. "F^li^ Lollini."

In this instrument the handles are not superimposed as in the two preceding forceps. One (that corresponding to the left blade)

forms a blunt hook at its extremity, the other being rectangular. In this sample the rectangular hook has been brazed on to the handle. The handles are convex and grooved externally. As in the long forceps, the lock revolves and bears a thumb-piece on both sides; it passes through a slot in the female or right limb; the blades, however, are not reversible, and are not made thinner, but on the contrary, are rather stouter at the lock. There is an extra left blade with a blunt hook; it bears a single thumb-piece which fits into the slot. The blades are shorter than in the two preceding forceps and are broad at the tip, not being made to dilate the cervix.

Rizzoli states (*loc. cit.*) that he preferred his own *articulation à pivot,* a modification of Levret's original lock, with a thumb-piece on both sides, seen in this instrument. He adds, however, that he directed his makers, the Brothers Lollini, of Bologna, to construct similar forceps with the *articulation à coulisse,* which latter form of joint, a screw pivot and lateral mortise, he admits that he adopted for his modification of Baudelocque's cepholotribe (No. 110), as may be seen in the sample of that instrument preserved in this collection. *Royal Society of Medicine.*

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48. **Lovati's Modified Levret's Forceps.**

Weight 2 lb. $\frac{1}{2}$ oz. (922 grms.); length 1 ft. 6 $\frac{1}{2}$ in. (46.5 cm.); length of blades 10 in. (25.4 cm.); breadth of do. 1$\frac{5}{8}$ in. (4.12 cm.) near tip; greatest breadth across blades 2$\frac{3}{4}$ in. (7 cm.); distance between tips when closed $\frac{5}{8}$ in. (1.5 cm.); length of fenestræ 5 in. (12.7 cm.); breadth of do. $\frac{7}{8}$ in. (2.2 cm.).

"Fli Lollini, Bologna."

A forceps after Levret's type, but the blades are longer and more slender, and the handles are flattened, not laterally but antero-posteriorly, and cased with wood as in the English forceps. The wood is smooth and bears deep finger depressions, as in Simpson's long forceps; there is a very broad palm-rest, and the upper border of the wooden lining forms a shoulder, without any flange or finger-rest. There is a slot and thumb-lock as in the Levret's forceps in this collection. This instrument, bearing the name of the Brothers Lollini, instrument makers, Bologna, was described as Lovati's, when exhibited by Professor Lazzati at the Obstetrical Society in 1866. *Royal Society of Medicine.*

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49. **Young's (?) Forceps.**

Weight 1 lb. 15 oz. (880 grms.); length 19 in. (48.26 cm.); length of blades 10$\frac{3}{4}$ in. (27.3 cm.); greatest breadth of do. (near tips) 3 in. (7.6 cm.); distance between tips *nil*; length of fenestræ 6$\frac{1}{2}$ in. (16.5 cm.); breadth 1 in. (2.5 cm.). No maker's name.

A forceps of the Levret type, each limb of one piece of solid nickel-plated (?) steel, flattened and slightly convex externally, ending in blunt hooks, the left unscrewing, the right bearing a slot for tapes. Lock of the old French type, a flat thumb-piece on the left blade, fitting into a slot in the right blade.

Blades with pelvic curve, no distinct shanks, inner surface flat.

The name of Young was ascribed to this forceps, when it was placed in a case in the Museum of the Obstetrical Society.

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50. **Pajot's Forceps, with Disarticulating Blades.**

Weight 1 lb. 11¼ oz. (773 grms.); length 17¾ in. (45 cm.); length of blades 10 in. (25.4 cm.); breadth of do. 2 in. (5 cm.), near tip; greatest breadth across do. 3 in. (7.6 cm.); space between tips of closed blades ¼ in. (0.6 cm.); length of fenestræ 5 in. (12.7 cm.); breadth of do. 1⅜ in. (3.5 cm.). "Charrière."

French long forceps of the Levret type, with modified handles and blades, which can be detached. The extremity of the left blade turns up and ends in an "olive," which unscrews, exposing a free pointed end, which serves for a broad hook. The extremity of the left handle also turns up; it unscrews at its base, exposing a sharp perforator. The lock is of the modern French type, a button screw and lateral mortise. The blades bear a strong pelvic curve and the fenestræ are wide. At the shank of each blade is a so-called "Péan's lock," which allows of its disarticulation and the substitution of a blade of a different size.

This *articulation à tenon,* associated with Péan's *pince hémostatique* was invented by Charrière, as was already known in 1866, when it was mentioned in the Catal. Obstet. Soc., 1866, p. 90. "M. Charrière's Jointed Forceps.—The inventor and maker states: 'The method of dismounting these forceps is very simple and solid, and permits also of the adaptation of the blades of various forms and sizes without augmentation.' See Charrière's Catalogue, p. 120, fig. 309." The "Pajot's Jointed Forceps," exhibited in 1866, resembled Charrière's, but had "at one extremity a blunt hook, at the other a thread of silk, terminated by a leaden ball, for the purpose of embryotomy, as recommended by the inventor (see Charrière's Catalogue, p. 120, fig. 308)." Catal. Obstet. Soc., 1866, p. 102.

This *forceps à branches désarticulées de Pajot,* more shortly termed *forceps brisé,* is fully described, with illustrations, in Charpentier's "Traité pratique des accouchments," 1870, vol. ii, p. 682–4 and figs. 609–13. *Royal Society of Medicine.*

51. Levy's Forceps.

Weight 1 lb. 7½ oz. (666 grms); length 16½ ins. (41.9 cm.); length of blades 8½ in. (21.7 cm.); breadth of do. 1½ in. (3.8 cm.); greatest breadth across do. 2¾ in. (7 cm.); distance between closed tips *nil*; length of fenestræ 4¾ in. (12.1 cm.); breadth of do. ⅞ in. (2.2 cm.).

"Nyrop, Kjobenhavn, 1862."

A highly-finished instrument, the lower part of the handles is coated, not laterally but in front and behind, with wood. No palm-rest; the lower ends of the handle are slightly everted.[1] There is on each handle a finger-rest or flange connected at its base with a joint by which the handle can be folded on the blade, a sliding catch below the flange serves to fix the blade. The lock is of the English type.

The blades have a marked pelvic curve, their inner surfaces are slightly convex, and the fenestræ are short. This instrument was in general use in Denmark in 1860. It was designed "as a combination of the blades of Naegele with the handle of Saxtorph, with small jointed wings to support the fingers." ("Cat. Obstet. Soc., Lond., 1866, p. 95 and fig. 75.) For the history of the finger-rests see No. 14, D. W. Busch, and No. 26, Simpson's long forceps. Saxtorph was a Danish obstetrician, who in 1791 published a report of a forceps he had invented with Levret's blades and Smellie's handles. He made the handles to fold by a joint (as in Levy's forceps, but without any flange) on the blades, for convenience in packing (Mulder, "Historia Forcipum," p. 82 and Pl. vi, figs. 3 and 4). The earliest forceps with a jointed handle was designed by Freake (Giffard and Hody's "Cases in Midwifery (*sic*), 1734"). Joints designed for other purposes than convenience in packing are seen in Hamilton's (No. 12) and David Davis's forceps (No. 17) in this collection. Professor Carl E. Marius Levy was Chief Physician to the Lying-in Hospital, Copenhagen, in 1860.

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52. Lazarewitch's Short Forceps: with Pelvic Curve.

Weight 1 lb. 1 oz. (482 grms.); length 10⅞ in. (27.6 cm.); length of blades 8 in. (20.3 cm.); breadth (near tip), 1¾ in. (4.4 cm.); length of fenestræ 4 in. 10.1 cm.) breadth 1 in. (2.5 cm.); space between extremities of closed blades ½ in. (1.27 cm.); greatest breadth across blades 2¾ in. (7 cm.).

No maker's name.

1. This eversion of the end of a handle of a surgical instrument was adopted in France long before the nineteenth century. See Perret's "Art du Coutelier," Paris, 1772, Pl. 159, all crotchets with eversion of the end of the handle, and Pl. 94, four actual cauteries, and Pl. 110, fig. 5, a breast knife. See also Rizzoli's crotchet No. 128 in this Collection.

Handles with fluted rectangular ends to form a palm-rest, bearing externally a broad finger-rest in ivory, and internally a tenon and mortise lock beginning within an inch of the lower extremity. The handles and blades lie parallel without crossing.

Blade with finger-ring, of which the upper part is nearly in appositon with the corresponding part of the ring in the opposite blade; pelvic curve beginning above ring. Inner surface of blade quite flat.

In the Cat. Obstet. Soc., 1866, p. 95, a Lazarewitch forceps of this type is figured. "The inventor claims for these the following advantages: 1st, that owing to the halves not crossing, it is immaterial which blade is first introduced. 2ndly, that each half can be applied with equal facility, the first one introduced not being in the way of the second. The inventor considers this a special advantage in cases where the head is high in the pelvis and the vagina imperfectly dilated. 3rdly, that the lock, being in the handle, there is no fear of pinching the soft parts or including hairs. 4thly, that when considerable contractive force is necessary all hazardous pressure on the fœtal head may be avoided."

The forceps described in the catalogue was longer than this sample, being according to the tables (*loc. cit.*, pp. 84–85) $13\frac{1}{4}$ inches (33.65 cm.) long and bore no ivory finger-rests and had no finger-ring, the blades diverging immediately above the handles, forming a wide curve between the lock and the free end of the blades. Like this sample, on the other hand, the forceps described in the catalogue had a pelvic curve. The inventor changed the form of his forceps several times. Lazarewitch's name is now associated with the abolition of the pelvic curve, a sample of his straight long forceps being on view in this collection, No. 53.

Royal Society of Medicine.

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53. **Lazarewitch's Straight Long Forceps.**

Weight $16\frac{1}{2}$ oz. (454 grms.); length of forceps 13 in. (33 cm.); length of blades $9\frac{1}{4}$ in. (23.5 cm.); breadth $1\frac{1}{2}$ in. (3.8 cm.); length of fenestræ $3\frac{3}{4}$ in. (9.5 cm.); breadth $\frac{7}{8}$ in. (2.2 cm.); space between extremities of closed blades $\frac{5}{8}$ in. (1.5 cm.); greatest breadth across blades 3 in. (7.6 cm.). "Gerber, St. Petersburg."

This instrument resembles the inventor's short forceps with pelvic curve in that the blades are parallel, not crossing each other, and the handles have flattened rectangular ends to form a palm-rest. Its limbs are made purely of steel with no ivory coating, the handles each bear a flange or finger-rest an inch long and slightly concave

on the upper surface. To the tenon and mortise, a screw is added, to prevent undue pressure on the fœtal skull.

The blades bear a kind of finger-ring longer and narrower than on the short curved forceps; inner surface of blade flat.

The following statement about this instrument was made by Professor Lazarewitch, of Kieff, at the International Medical Congress in 1881.

"*Since* 1866, when at the Conversazione of the Obstetrical Society of London, I first determined to exhibit my forceps, I have never given up the idea of improving the instrument. *I have changed its form several times,* preserving its essential qualities—not crossing of the halves and easy locking. To test the above properties, which I find to be indispensable in good forceps, I have constructed a new forceps which, besides having these chief characteristics of my former instrument, is entirely without the pelvic curve." ("On the Obstetrical Forceps," *Trans. International Med. Congress,* 1881, Vol. iv, p. 260.)

This instrument was presented by the inventor to the Obstetrical Society of London. *Royal Society of Medicine.*

53A. **Lazarewitch's Straight Long Forceps with Crossed Handles.**

Weight 1 lb. 2 oz. (0.510 kilogr.); length 14 in. (35.6 cm); length of blades to lower lock 10½ in. (26.6 cm.); breadth (near extremities) 1¾ in. (4.4 cm.); greatest breadth across blades 2⅝ in. (6.6 cm.).

"Gerber: St. Petersburg."

This instrument differs entirely from the inventor's straight long forceps (53) and from his short forceps with the pelvic curve, in having crossed instead of parallel blades. As in both these instruments, the angles have rectangular ends (not, however, in this case, fluted) to form a palm rest. Like the long forceps each limb is made of steel, with no ivory coating. The handles cross at two points, first, at one inch (2.5 cm.) above the palm-rest, and secondly, two inches (5.08 cm.) higher. Between the joints the left blade, reduced in thickness in front and behind, describes a semicircle with its concavity inwards. The right also describes a semicircle between the joints with its concavity inwards, and it bears a long opening into which the semicircular portion of the opposite blade is received when the blades are locked. Then the opposed semicircles leave between them a circular space about 1¼ in. (3.17 cm.) in diameter.

The shanks are over 3 in. (7.6 cm.) long, and not very divergent; they are not distinctly divided from the blades, which bear no pelvic curve.

This instrument is one of the numerous varieties of forceps devised by Lazarewitch (see note to No. 53); it is not figured in Witkowski's "Arsenal Obstétrical." This sample was presented to the Obstetrical Society by the designer in 1893.

Royal Society of Medicine.

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54. **Aveling's Forceps.**

Weight 10 oz. (283 grms.); length $10\frac{3}{4}$ in. (27.3 cm.); length of blades 7 in. (17.7 cm.); breadth $1\frac{3}{4}$ in. (4.4 cm.); length of fenestræ $4\frac{3}{8}$ in. (11.1 cm.); breadth of fenestræ $1\frac{1}{4}$ in. (3.17 cm.); space between extremities of closed blades $\frac{1}{2}$ in. (1.27 cm.); greatest breadth across blades $2\frac{3}{4}$ in. (7 cm.).

"W. & H. - -, - inson, Sheffield."

Handles strongly curved, lined with smooth ebony, big palm-rest. No finger-rest or flange, no shoulder. English lock.

Blades with cephalic, pelvic and perineal curve, all marked; broadest near extremities, no shanks distinct from blades.

The history of this instrument is given by the inventor in several volumes of the *Transactions of the Obstetrical Society of London.* In March 1868 (*loc. cit.*, vol. x, p. 40), "Dr. Aveling exhibited a pair of midwifery forceps, the blades of which were curved backwards. By this modification a better grasp is obtained in making traction. The handles are more out of the way of the operator in introducing and locking the blades, and are also not interfered with by the legs of the patient when the head is passing over the perineum." In January 1876 (*loc. cit.*, vol. xviii, p. 2), "Dr. Aveling presented a pair of his forceps [this instrument] to the Society for the Museum." In June 1878 (*loc. cit.*, vol. xx, p. 130), Dr. Aveling read a memoir on "The Curves of Midwifery Forceps—their Origin and Uses." He claims (p. 148) to have been the first to introduce the handle curve, adding "Tarnier, in 1877, invented his ingenious forceps, which has the same sigmoid form as my own, and which is undoubtedly theoretically excellent, but practically far too complicated to come into general use." Further experience, however, showed that the Aveling type of instrument did not work satisfactorily, and Tarnier's axis-traction forceps soon became established. Dr. Aveling remarked in the course of a discussion (*loc. cit.*, vol. xx, p. 161) that "in his instrument the handles were purposely made smooth, because traction was intended to be made from their hooks, the sides being used simply for compression." *Royal Society of Medicine.*

55. **Robertson's (?) Forceps.**

Weight 12 oz. (340 grms.); length 12½ in. (31.75 cm); length of blade 8 in. (20.32 cm.); breadth of do. 1¾ in. (4.4 cm.) near extremity; breadth across blades 3 in. (7.6 cm.); distance between tips 1 in. (2.5 cm.); length of fenestræ 4 in. (10.16 cm.); breadth of do. 1¼ in. (33.17 cm.); the shanks measure 1½ in. (3.8 cm.).

"Matthews, Portugal Street."

This instrument resembles Ramsbotham's long-curved forceps, but the shanks are somewhat shorter and wider apart, and the pelvic curve more marked, whilst the inner surface is flat, not slightly convex. There is no finger-rest, but a shallow shoulder is formed by the metal everted on the upper border of the wooden coating.

Apparently a modification (English instead of Brünninghausen lock) of F. M. Robertson's instrument, figured and described in a pamphlet, "On a modification of the Obstetrical Forceps," New York, 1872. The original pattern was David Davis's forceps with symmetrical blades bearing wide fenestræ, which Hodge, of Philadelphia, imitated, reducing the fenestræ whilst Robertson made the shanks shorter and the remainder of the blade relatively longer. In this instrument, about which there is some doubt, the space between the shanks is much wider than in the typical instruments above referred to. *Royal Society of Medicine.*

55A. **Vacher's Cross-handled Forceps.**

Weight 9 oz. (255 grms.) (see note to No. 8); length of the whole instrument 9 in. (22.8 cm.); length of upper handle to shank, not measured by curve, 6½ in. (16.5 cm.); of lower blade 6¼ in. (15.8 cm.); greatest interval between the blades 3¼ in. (8.2 cm.); interval between the points of the blades 1¼ in. (3.17 cm.); greatest width of blades 1⅝ in. (4.12 cm.); length of fenestræ: lower blade 4½ in. (11.4 cm.), upper blade 4⅝ in (11.7 cm.); length across both handles when fixed 4½ in. (10.7 cm.); length of each handle 2 in. (5 cm.); depth 1 in. (2.54 cm.); breadth ¾ in. (2 cm.). This sample is of the second pattern, with blades, etc., rather larger than the first and with smooth wooden handles.

Thus described by its inventor, Mr. Francis Vacher, F.R.C.S. Ed., L.R.C.P. Ed. (1843—1914), of Birkenhead, "Remarks on a New Midwifery Forceps," *Liverpool and Manchester Med. and Surg. Reports*, 1873, p. 77; and "On Certain Improvements in the Hinged Short Forceps: an appendix to Remarks on a New Midwifery Forceps," *ibid.*, 1874, p. 99. "The instrument may be described as consisting of two blades or claws, essentially the same as those of short forceps, except that the lower blade is slightly

shorter than the upper, being adapted to lie within it when the instrument is closed. At the lower extremity or base of each blade is a handle, rounded off and slightly curved like a small horn. The handles are of black wood (chequered according to the first pattern, but smooth in the second, as Vacher found that rough handles were hard to clean); but the bases, which are perfectly flat, are faced with steel, as are also the parts directly towards the blades, the handles and bases and extending into the shanks of the blades, is a stout hinge.'' A strong steel strap projects from the free end of the handle, attached to the upper blade, it runs along the free border of the blade, ending close to the hinge in a catch, which, fitting into a groove in the opposite handle, locks the blades when *in situ*. The hinge rivet, in this second pattern, is fitted with a head, so that it may be readily withdrawn, as "should delivery prove impracticable after the child had been sufficiently long dead, it would be an advantage to be able to separate the blades and remove them right and left in the ordinary way'' (*loc. cit.*, 1874, p. 100, with drawings).

Vacher describes in full how he applied this instrument; he maintained "that the simple transverse handle was better adapted for traction, less cramping to the hand, less fatiguing to the operator than any other, not excepting the handles with short cross-stops'' (finger-rests). Traction is effected without compression; it is smaller, lighter (?) and more portable than any other form of forceps; it does not alarm the patient, cannot fail to lock and cannot slip. "It is a vectis no less than a pair of forceps, and when folded may be used as that instrument to assist the extraction of the head, correct mal-positions, and as a lever-tractor, the operator making a fulcrum of his left hand, and drawing with his right.'' (N.B. More Madden's short forceps, in this collection, weighs only $8\frac{3}{4}$ oz. (248.5 grms.).

Several cross-handled forceps were described about the second and third quarters of the nineteenth century. Witkowski, "Arsenal Obstétrical,'' figures Vacher's figs. 546, 547, and Draper's, very similar, but with no head to the hinge-rivet, fig. 561. Mattei's leniceps (1853) and Mondotte's forceps are described "Cat. Obstet. Soc., 1866,'' pp. 96, 98; Hamon's retroceps (1867) is figured in the "Arsenal,'' figs. 576—578.

Vacher's forceps did not prove satisfactory. The blades were introduced superimposed, and one blade was then revolved round the fœtal head, but the soft parts of the mother and child were too often carried with it, and moreover the blades were apt to lock. The cross-handles came too close to the external soft parts, which were sometimes damaged, and the hinge was difficult to keep clean.

Purchased 1917.

56. **More Madden's Forceps (Short).**

Weight $8\frac{3}{4}$ oz. (248.5 grms); length $10\frac{3}{4}$ in. (27.3 cm.); length of blades $6\frac{1}{2}$ in. (16.5 cm.); breadth of do. (near tip) $1\frac{3}{8}$ in. (3.5 cm.); length of fenestræ 5 in. (12.7 cm.); breadth of do. 1 in. (2.5 cm.); space between extremities of closed blades 1 in. (2.5 cm.); greatest breadth across blades $3\frac{1}{8}$ in. (7.9 cm.).

"Dr. T. More Madden's forceps, John Whyte, 58, Upper Sackville Street, Dublin"—badly cut into the metal.

Handles coated with roughened ebony, stout and short, palm-rest, shoulder, formed by upper end of wooden coat, but no finger-rest.

Blades part immediately above lock, no shank, moderate even curve; inner surfaces (borders of fenestræ) distinctly concave.

Dr. More Madden's short straight forceps weighed only eight ounces and was a very powerful tractor. This instrument was intended only for cases of delay in the second stage of labour, and might be used with wonderful facility as well as power. ("On Some Improvements of the Long and Short Forceps, and their Use in Midwifery Practice," *Obstet. Journ. of Great Britain and Ireland,* vol. i, p. 547; and *Brit. Med Journ.*, vol. ii, 1873, p. 260–1.)

Royal Society of Medicine.

56A. **McDonald's Semi-Fenestrated Forceps.**

Weight 1 lb. 9 oz. (610 grms.); length $15\frac{1}{4}$ in. (36.7 cm.); blades and shanks 9 in. (22.8 cm.), the shanks taking up 4 in. (10.16 cm.); other measurements are given below. (Made in New York; no maker's name.)

Each part of this instrument is made of one piece of steel, nickel-plated, except over the handles which are left rough. The handles are widened out at their free ends to form a palm-rest, they bear deep finger depressions on their sides, and each has a distinct finger-rest above. They are hollow inside, for lightness. The shanks are very long, flattened anteriorly, and tapering towards the blades; the upper is completely superimposed on the lower or left shank when the blades are closed. English lock, handles extended upwards beyond the finger-rests to meet it, as in Busch's forceps (No. 14).

The most peculiar feature of this instrument is the form of the blades. The donor, Dr. Ellice McDonald, designed this forceps for reasons which he gives at length in "The Forceps Operation," *Amer. Journ. Obstetrics,* vol. lxi, 1910, p. 224. He considered that in Simpson's forceps the blades were too long, endangering the soft parts when tractions are made on the head. Although most obstetricians consider that long shanks involve more risks than long blades, Dr. McDonald finds that the reverse is the case, and

that the space between the shanks in Simpson's forceps often causes stretching and tearing of the fourchette before the head reaches the perineum. In order that the blades may be easy of application they are made relatively narrow, and the cephalic curve is less pronounced than in most modern forceps. The solid blades (as in the Tucker-McLane forceps, another recent type) allow of a safe grasp, and Dr. McDonald has made them as short as possible, and wide at the tips. They bear numerous transverse fenestræ (8 in this sample, 15 in the drawing in the donor's paper). These modifications allow the forceps to approximate more closely to the fœtal head and to grip more firmly the parietal eminences. The bowl is $5\frac{1}{3}$ in. (13.5 cm.) in length, the blades are $1\frac{1}{2}$ in. (3.8 cm.) broad near the tips, narrowing considerably below and bearing a distinct pelvic curve, and when they are closed their extremities lie $1\frac{3}{4}$ in. (3.5 cm.) apart. The greatest breadth across the blades is a little over 3 inches or about 7.75 cm.

Dr. Ellice McDonald, 1914.

56B. **Tarnier's Axis-Traction Forceps.**

Weight 2 lb. 1 oz. or 33 oz. (926 grms.); total length of blades: shanks and "application handles" $16\frac{1}{4}$ in. (41.2 cm); of blades and shanks to lock $10\frac{1}{2}$ in. (26.6 cm.); the shanks alone are 3 in. (7.6 cm.) long; greatest breadth of blades 2 in. (5 cm.); length of fenestræ $3\frac{1}{4}$ in. (9.5 cm.); greatest breadth $1\frac{1}{4}$ in. (2.8 cm.); space between extremities of blades $\frac{5}{8}$ in. (1.5 cm.); greatest breadth across blades $3\frac{3}{8}$ in. (8.5 cm.); length of traction rods to joint of traction handle, not measured by curve, 11 in. (28 cm.); length of traction handle $9\frac{5}{8}$ in. (24.4 cm.).

"Collin et Cie à Paris, 219. Par brevet d'inventeur S.G.D.G. (*sans garantie de gouvernement*)."

Blades very stout and rounded, moderate cephalic and pelvic curve, French forceps-lock (see Nos. 5 and 46). The shanks, flattened antero-posteriorly are bowed outwards from the lock and then turn inwards so that they touch when the blades are closed to their greatest extent, when the usual or "application" handles lie apart at their far ends to the extent of over an inch; at the same time an oval gap between the shanks allows of the introduction of the operator's finger. The metal of each limb runs for the whole length of the "application" handles, and is coated before and behind with smooth ebony. No finger-rests, free ends everted (see Nos. 51, 128). The fixation screw swings upwards and downwards on a hinged pivot projecting from the anterior surface of the handle of the lower blade near the lock, it is made to pass into a gap in a ring on the opposite handle, being fixed by a travelling screw with wide wings. The traction rods or stems each fit into a

groove cut in the metal of the blade, moving on a pivot; by this arrangement they are made level with the blades. They bear at their free ends a spring push, over which a socket passes to keep them close together. This socket forms a hollow cylinder about $\frac{3}{4}$ in. (2 cm.) long, united to the middle of the traction handle by a pin. Thus the handle, a cylindrical oaken bar, can rotate on the pin, and together with the socket can rotate round the ends of the traction rods, making a universal joint.

The essential feature of the axis-traction forceps is that it has traction rods joined to the proximal end of the blades and curving backwards towards a transverse bar, the "traction handle" of the instrument. The attachment of rods to the handles allows of direct traction on the head in their embrace. The "perineal curve," or backward compensation curve, of the rods allows of the traction by a curved instrument through a curved canal without either loss of power or misdirection of force. The jointing of the rods allows the advancing head to move the "application handles" (the ordinary handles of obstetric forceps) in the constantly changing direction along which it is travelling; and the direction of the application handles thus furnishes the operator with an unerring index to the proper line of traction. Thus Sir Alexander R. Simpson summarises the function of the axis-traction forceps—see reference to Notes to No. 56c.

This instrument was made after the second (1877) pattern of Tarnier's axis-traction forceps; where compared with the other type the handles were lighter, the shoulders smooth at the points of articulation of the traction stems with the blades and the handles locked by a new and simple arrangement. See "The New Forceps of S. Tarnier," *Brit. Med. Journ.*, vol. i, 1877, p. 665; also *Trans. Obstet. Soc.*, vol. xix, 1877, p. 224, a letter from Professor Tarnier to Dr. Alfred Wiltshire. In this sample, however, the shouldering of the traction rods is different, though it is seen as in Tarnier's original 1877 model in A. R. Simpson's forceps, 56c. Besides, the universal joint is a later modification shown in Tarnier's 1881 pattern, where the traction rods are jointed (see Witkowski's "Arsenal Obstétrical," figs. 615 and 617). *Purchased* 1917.

56c. **Sir A. R. Simpson's Axis-Traction Forceps.**

Weight $1\frac{1}{2}$ lbs. or 2 lbs. (681 grms.); total length 14 in. (35.6 cm.); of blades, point to lock, 9 in. (22.8 cm.), including shanks which are $2\frac{1}{2}$ in. (5 cm.) long; greatest breadth of blades 2 in. (5 cm.); length of fenestræ 4 in. (10.16 cm.); greatest breadth $1\frac{3}{8}$ in. (3.5 cm.); space between extremities of blades 1 in. (2.54 cm.); greatest breadth across blades $3\frac{1}{8}$ in. (7.9 cm.).

Length of traction rods, including locking plate and joints of traction handle, 11 in. (27.9 cm.), not measured by curve; length of traction handle $7\frac{1}{2}$ in. (19 cm.).

"Gardner, 5 South Bridge, Edinburgh," is marked on the metal of the inner side of the handle of the right or upper blade. The metal of the other handle is marked "Left or lower b. first."

As in Sir James Simpson's forceps (25, 26) the shanks of the blades part considerably above the lock to allow of the fingers to be placed between them; English lock. The metal of each blade is continued the whole length of the application handles. It is coated outside with perfectly smooth ebony, no finger-rest, no lateral finger depressions. In place of palm-rests the wood at the free ends is everted and rounded, as in Tarnier's axis-traction forceps, and in many foreign forceps of the ordinary type (see note Nos. 51, 128). The fixation screw closely resembles that which is fitted to Tarnier's forceps, No. 56B, though the hinged part and the gap in the ring are made so that the screw moves horizontally, and the travelling screw has much shorter wings.

The traction rods articulate with the blades by a little shoulder, so that they are level with the blades and swing on a pivot. This mechanism was adopted by Tarnier for his 1877 model, but is greatly modified in the sample of Tarnier's forceps in this collection (see No. 56B and notes). In place of the universal joint connecting the traction handle with the rods there is a locking plate to which the left traction rod is permanently jointed by a screw on which it swings laterally, and a slot into which a screw on the right traction rod can be inserted. This locking plate is jointed on to a piece of metal, over an inch long, screwed at its other end into the middle of the traction handle which is made of oak, as in Tarnier's forceps. The screw at the locking plate allows the joint to move laterally, while the traction handle, firmly attached to the piece of metal can be rotated as much as the operator desires.

This instrument is described in Sir Alexander Russell Simpson's "Again on Axis-traction Forceps," *Trans. Edin. Obstet. Soc.*, vol. xiii, 1883, p. 143. He explains at full length its special advantages, and lays much stress on the importance of easy locking and unlocking of the traction rods, attained in his experience by the locking plate above described.[1] *Purchased* 1917.

1. The traction handles being fixed to the blades the soft parts were liable to injury. Hence Neville's modification, where they are fixed to the handles of the blades and acted in the same way, became preferred by many obstetricians to Tarnier's and A. R. Simpson's models.

End of Part I.

Descriptive Catalogue

OF THE

Obstetrical Instruments

IN THE

Museum of the Royal College of Surgeons of England

Including the LOAN COLLECTION, formerly constituting the Museum of the Obstetrical Society of London, now deposited in the Museum of the College by the Royal Society of Medicine

PART II.

COMPILED BY

ALBAN H. G. DORAN

Fellow of the College

1921

PART II.

57. Lowder's Folding Vectis.

Steel handle with ebony cover, palm-rest as in a forceps.

Weight 6½ oz. (184 grms.); length 1 ft. (30.5 cm.); length of blade 8½ in. (21.7 cm.), inclusive of 1⅜ in. (3.5 cm.) below the hinge; breadth of blade 1⅞ in. (4.75 cm.); breadth of fenestra 1¼ in. (3.17 cm.).

"Whitford, St. Ba . . . . . w's Hospital" (almost effaced).

The blade is jointed 1 in. (2.5 cm.) above the handle, and there is a pin on the portion of the blade below the hinge fitting into a corresponding hole in the handle, to hold the blade steady. The fenestra occupies the upper third of the blade which is flat on its inner surface. Handle partly metal, flat, prolonged from the blades, lower part coated with smooth, convex, wooden cover with palm-rest, as in ordinary obstetric forceps.

This instrument, once much used, and sometimes called "Lowndes's vectis," is almost identical with the instrument figured as Lowder's in Mulder's "Historia Forcipum et Vectium," Pl. ix, figs. 10 and 12. Dennison's Vectis (*ib.*, figs. 13, 14) was also jointed and otherwise similar, but the curve of the blade was wider and the fenestra still smaller. Uvedale West's Vectis Tractor ("Cat. Instr. Obstet. Soc., 1866, p. 215, and figs. 209, 210), believed to possess "all the advantages of the ordinary vectis, with the addition of some of those of the loop," had a jointed handle with the same mechanism, but the fenestræ were much wider, taking up a greater part of the blade. Lowder explained the use of his vectis or lever to his classes, but left others to describe and figure it and to devise several modifications. See Mulder (1794), *loc. cit.*, and Andrew Duncan's "Medical Commentaries for the year MDCCXCIII," Edinburgh, where it is stated, p. 413, that "the Doctor (Lowder) has not yet publicly explained (in so far as I know), neither in his class, nor in any printed work, the particular manner in which it should be used, nor the general principles on which it acts." *John Birkett, Esq.*, 1870.

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58. Lowder's Vectis (Modified).

Weight 5 oz. (142 grms.); length 11½ in. (29.2 cm.); length of blades 7¼ in. (18.4 cm.); breadth 1⅞ in. (4.75 cm.); breadth of fenestra 1¼ in. (3.17 cm.; length of fenestra 2¼ in. (5.7 cm.).

Handle as in No. 57. *Royal Society of Medicine.*

59. **Baudelocque's Vectis.**

Weight 6 oz. (170 grms.); length 11¼ in. (28.125 cm.); length of blade 7 in. (17.7 cm.); breadth of blade 1⅝ in. (412 cm.); length of fenestra 3¾ in. (9.5 cm.).

The blade has a sharp uniform curve, it is narrow with a long fenestra. Below the fenestra are two parallel longitudinal slits ⅜ in (.9 cm.) long, and ¼ in (.6 cm.) apart, for the passage of tapes. Walnut wood handle, smooth with palm-rest, flattened anteriorly, rounded at the back. Smooth wooden handle, flat in front; palm-rest.

Labelled "Baudelocque's Vectis with slits for tapes," when exhibited in the Museum of the Obstetrical Society. It is quite different from the "Vectis Baudelocquii" of Mulder's "Historia Forcipum," etc., p. 113 and Pl. viii, figs. 23, 24, reproduced in Kilian's "Armamentarium" and Witkowski's "Arsenal." fig. 326, p. 61. This old type designed by Jean Louis, the great Beaudelocque, uncle of Louis Auguste, designer of the cephalotribe, No. 110, bore a short blade with a short fenestra springing abruptly from a very long and perfectly straight shank, and the handle was bent sharply downwards on the shank. The mechanism (see Mulder, *loc. cit.*) was quite different from that of this instrument.

Hubert and others added the slits for tapes, see No. 66. Marked "335." *Royal Society of Medicine.*

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60. "**Evans'**" **Spring-Handled Vectis.**

Weight 6½ oz. (184 grms.); length 11½ in. (29.2 cm.); length of blade 7 in. (17.7 cm.); breadth of blade 1¾ in. (4.4 cm.); length of fenestra 2¼ in. (5.7 cm.). "Evans."

Long thick blade, wide, even curve, fenestra short, oval. Smooth wooden handle, flat in front. Palm-rest. It unscrews and is furnished with a spring-bolt to prevent rotation of the blade when in use. *John Birkett, Esq.*

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61. **Lever's Vectis** (Modified *circ.* 1860).

Weight 4 oz. (113 grms.); length 11 in. (28 cm.); length of blades 7 in. (17.7 cm.); breadth 1½ in. (38 cm.); length of fenestra 2 in. (5cm.). "Thompson."

This instrument is smaller than the original which measured 12¼ in. (31.1 cm.) in length.

A small vectis with a moderate curve, steel nickel-plated, much flattened anteriorly, fenestra short. Smooth wooden (ebony) handle, flat behind. Palm-rest. *Royal Society of Medicine.*

62. **Spring-Handled Vectis** (*circ.* 1860).

Weight $5\frac{1}{2}$ oz. (156 grms.); length $12\frac{1}{2}$ in. (31.75 cm.); of blade $7\frac{1}{2}$ in. (19 cm.); greatest breadth of blade $1\frac{7}{8}$ in. (4.75 cm.); length of fenestra 3 in. (7.6 cm.). "Arnold, London."

Long narrow blade with long fenestra and wide curve. Ebony handle flat on anterior surface, wood chequered on both sides, palm-rest; it is made to unscrew for portability and bears a spring-bolt to prevent the blade rotating when in use.

Made about 1860. Messrs. Arnold & Sons have no record for whom it was constructed, which means that it was not made for a recognized teacher or for a lying-in hospital.

Royal Society of Medicine.

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63. **Spring-Handled Vectis** (*circ.* 1866).

Weight $6\frac{1}{2}$ oz. (184 grms.); length $12\frac{3}{4}$ in. (32.4 cm.); length of blade 7 in. (17.7 cm.); greatest breadth of blade 2 in. (5 cm.); length of fenestra $2\frac{1}{2}$ in. (6.35 cm.). "Ferguson, London."

Long blade, broad near its extremity, wide, rather short, fenestra. Ebony handle, smooth wood, flat on anterior surface, palm-rest. The spring-bolt is nearly 2 in. (5 cm.) in length; in No. 62, the other vectis with that contrivance, it is hardly half as long. *Royal Society of Medicine.*

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64. **Fabri's Vectis (I).**

Weight $8\frac{1}{2}$ oz. (241 grms.); length 15 in. (38.1 cm.); length of blade $9\frac{1}{2}$ in. (24.1 cm.); breadth of ditto $1\frac{3}{4}$ in. (4.4 cm.); length of fenestra $4\frac{3}{4}$ in. (12.1 cm.). "Fli Lollini."

Blade very stout, curve wide. Ebony handle, four-sided, four deep finger-depressions in front, smooth and narrow behind, broad and chequered laterally.

"Two Vectes of Professor Fabri of Bologna, were exhibited by himself. . . . The shank and lower half of the blade curving backwards in both; but in one (this instrument, No. 64) the upper half curves forwards, whilst in the other (No. 65) it becomes straighter, but does not curve forwards." Cat. Obstet. Soc., 1866, pp. 215—216, where it is erroneously stated, in the sentence omitted in the above quotation, that the pair are identical in length and weight. *Royal Society of Medicine.*

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65. **Fabri's Vectis (II).**

Weight $8\frac{1}{2}$ oz. (241 grms.); length $14\frac{1}{2}$ in. (36.8 cm.); length of blade 9 in. (22.3 cm.); breadth of blade $1\frac{3}{4}$ in. (4.4 cm.); length of fenestra $4\frac{3}{4}$ in. (12.1 cm.). "Fli Lollini."

See note and description of the preceding instrument. Conquest's Vectis, see No. 338. *Royal Society of Medicine.*

66. **Boddaert's Lever.**

Weight 11 oz. (312 grms.); length 14¼ in. (36.8 cm.); of blade 9 in. (22.8 cm.); greatest breadth 1½ in. (3.8 cm.).

"H. Glitschka à Gand."

Blade a heavy thick piece of steel, with a very wide curve. No fenestra, but there is a shallow concavity nearly 4 in. (10.16 cm.) long in its upper part anteriorly. It screws on to its handle which is four-sided, flattened with chequered surface laterally and curved forwards at its free end.

Boddaert's lever was much used in Belgium about 1871 when Dr. Robert Barnes presented this sample to the Obstetrical Society of London. Belgian obstetricians employed it in cases where British authorities preferred the forceps. Dr. Boddaert applied his lever in many cases of delay of the head at the brim. Dr. R. Barnes "pointed out that such a bar could only be a lever, and in no sense a tractor." (*Trans. Obstet. Soc.*, vol. xiii, p. 213.)

The earliest form of this spatula-like "lever" was Camper's. (Mulder, "Historia Forcipum et Vectium," p. 104, and Pl. viii, Fig. 19, and Witkowski's "Arsenal," Fig. 314, p. 60.) De Bruas and others devised about the same time (1750—1770) levers without fenestræ (see Mulder and Witkowski, *loc. cit.*); De Bruas' lever (1793, Mulder, p. 126, Pl. ix, Fig. 20, Witkowski, Fig. 334, p. 61) closely resembles Boddaert's. Hubert, Junr., added to Boddaert's lever parallel slits for the passage of tapes (see No. 59 and Witkowski, *loc. cit.*, Fig. 352, p. 62). *Royal Society of Medicine.*

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67. **Plain Whalebone Fillet.**

Total length 11 in. (28 cm.); length of whalebone forming loop 18¾ in. (47.6 cm.), not including 1¼ in. (3.17 cm.) on each side fixed to the handle. Vertical measurement of loop 8½ in. (21.5 cm.); greatest width 3¾ in. (9.5 cm.). Ebony handle. The two ends are immovably fixed to the sides of a solid wooden handle.

This instrument is usually termed the "plain whalebone fillet." A whalebone loop, somewhat like a blade of a forceps, was known to Smellie. J. G. Westmacott, *Trans. Obst. Soc.*, vol. xi, 1869, "On the Use of the Whalebone Loop," p. 177 (writing at a date when, according to Dr. Barnes (*ib.*, p. 183), the loop or fillet was much used by several practitioners in the East of London), made a modification (No. 67A). R. Eardley Wilmot, "On the Fillet or Loop as an Obstetric Aid," *Trans. Obstet. Soc.*, vol. xv, 1873, p. 172, states that "there are a large number of country practitioners who will bear testimony to the amount of time which they have saved by the use of the fillet." He contrived (No. 67B) a modification of Dr. Westmacott's instrument" (*loc. cit.*, p. 177). Aveling

and Playfair (*loc. cit.*, pp. 178-9) denounced the fillet altogether. See also "The Steel Fillet" of E. R. Sheraton, *Trans. Obstet. Soc.*, vol. viii, 1866, p. 259, a description of a patented instrument which soon became obsolete (Aveling, *loc. cit.*, vol. xv, 1873, p. 179).

Royal Society of Medicine.

67A. **Westmacott's Fillet.**

Total length $12\frac{1}{4}$ in. (31.1 cm.); length of whalebone forming loop 20 in. (50.8 cm.), not including $\frac{3}{4}$ in. (1.9 cm.) on each side fixed by screws into handle. Vertical measurement of loop, to handle, $9\frac{1}{4}$ in. (23.5 cm.). Greatest width of loop $3\frac{3}{8}$ in. (8.5 cm.).

This instrument, devised by Dr. John Guise Westmacott, is described by him in a communication "On the Use of the Whalebone Loop" in the *Trans. Obstet. Soc.*, Lond., vol. xi, 1869, p. 177. For fourteen years, during his appointment of Medical Officer to the Paddington Provident Dispensary, and in private practice, he had frequently employed the whalebone loop or fillet, and found it so serviceable that he seldom attended a labour case without having it at hand, and in several instances it had equally answered the purpose of the short forceps. "The only alteration which I lay claim to from the original loop is the substitution of a couple of screws with nuts on one side of the handle, which easily allows one end of the loop to be removed, so as to slip readily over the head of the child as it passes through the external parts, in cases where the head is large and there is danger of tearing the perineum. In most cases, however, the loop passes out with the extraction of the head without the slightest injury to the parts. The loop ought to be from 22 in. (55.3 cm.) to 24 in. (61 cm.) long, allowing $1\frac{1}{2}$ in. (3.8 cm.) on each side of the handle; the width of the handle $1\frac{1}{4}$ in. (3.17 cm.), bevelled to allow the fore or second finger to hook over it, and the length from $1\frac{1}{2}$ in. (3.8 cm.) to 2 in. (5 cm.) round. The whalebone is between $\frac{1}{4}$ in. (6.6. cm.) and $\frac{3}{8}$ in. (1.5 cm.) in breadth, about $\frac{1}{8}$ in. (0.3 cm.) in its central thickness, and perfectly smooth on both sides, with the edges reduced a little and slightly rounded, that no abrasion may be caused by its use."

Dr. Westmacott figures this instrument, *loc. cit.*, p. 182. It resembles this sample in its general characters, its screw mechanism and its solid handle; Wilmot's fillet, 67B, being armed with a handle divided longitudinally. The handle, on the other hand, is much longer in this sample than in Westmacott's drawing, and the bevelling of its upper border is not nearly so deep. The screws are here secured by big milled nuts on each side. Dr. Eardley Wilmot (67B) preferred a long handle to the fillet.

Westmacott describes the application of his fillet at length, with

diagrams (*loc. cit.*, p. 182), showing the loop on the fœtal head, and three experienced obstetricians discussed its merits. (See Nos. 67 and 67B.) *Dr. H. C. Pattin,* 1919.

67B. **Eardley Wilmot's Fillet.**

Total length 1 ft. (30.5 cm.); length of whalebone forming loop 19 in. (48.2 cm.), not including 3 in. (7.6 cm.) on each side fixed by screws into handle. Vertical measurement of loop to handle 9 in. (22.8 cm.); greatest width of loop $3\frac{1}{2}$ in. (8.9 cm.).

This instrument, devised by Dr. R. Eardley Wilmot, is described by him as "a recent modification of Dr. Westmacott's" (67A) in a communication "On the Fillet or Loop as an Obstetric Aid with especial Preference to a New Modification of the Instrument," *Trans. Obstet. Soc.*, vol. xv, 1873, p. 172. Like Dr. Westmacott, he supports the use of the fillet on the ground of satisfactory personal experience. Westmacott overcame the difficulty of taking off the fillet by making one end of the loop removable; Eardley Wilmot found that there remained frequent difficulty in adjusting the fillet. "The desideratum here clearly is that each limb of the loop may, after introduction, be manipulated separately till a firm hold is obtained. Any error of position, or twisting, or impaction of the loop, might be rectified at once by movement of the part at fault. This, I think, has been completely attained in a recent modification of Dr. Westmacott's instrument, made for me by Messrs. Matthews. In this instrument the handle is divided longitudinally, so as to leave one end of the whalebone loop attached to each section of the haft. The two portions are separable at pleasure, or united, when compressed, by steel pins, projecting from one half of the handle and perforating the other. The principle of Dr. Westmacott's side-fastening to aid removal after introduction is retained. The handle is made slightly longer for more convenient manipulation. The difficulty of adjustment is thus completely overcome." The above observations are illustrated by a drawing, with the parted portions represented by dotted lines (*loc. cit.*, p. 177). The drawing represents an instrument apparently identical with this sample. The handle is of ebony.

These two fillets, 67A and 67B, are of interest as showing how two experienced obstetricians endeavoured to revive the use of an almost discarded instrument in the latter half of the nineteenth century.

Dr. Eardley Wilmot describes its application, and his paper is published with a discussion on the use of the fillet in which Dr. Westmacott and Dr. Playfair and other obstetricians took part. (See also Nos. 67 and 67A.) *Dr. H. C. Pattin,* 1919.

68. **Locock's Funis Replacer.**

This instrument is composed of two whalebone rods. One is straight throughout and 18½ in. (46 cm.) long, and the other 14½ in. (36.2 cm.) long, is curved or hooked 1½ in. (38 cm.) at its free end; three metal eyes are fixed to the curved rod along which the straight rod slides.

The straight rod is drawn down when the instrument is introduced into the vagina and the hook is passed round the funis. Then the straight rod is pushed upwards, so that the funis, caught in the space between the free ends of the two rods can be replaced. Lastly, the straight rod is drawn downwards, so that the reduced funis can be released and the replacer withdrawn.

Presented by Sir Charles Locock, Bt., to the Obstetrical Society of London (see Cat. Obstet. Soc., Lond., 1866, p. 228). A short description is given (*ib.*, p. 115) without measurements.

This instrument strongly resembles the "Omphalosoter de Schoeller, ouvert et fermé," figured in Witkowski's "Arsenal Obstétrical," fig. 243, p. 49, and in Bernard and Huette's "Précis iconographique de médecine opérative," 1856, Pl. xxv, fig. 8, "Porte cordon en baleine de Schöller."

Royal Society of Medicine.

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69. **Van Huevel's Foot Forceps (Rizzoli's Modification).**

Length 11½ in. (29.2 cm.); length from end of blade to lock 3¼ in. (8.2 cm.). "Lollini" (of Bologna).

This instrument "works like a pair of ordinary scissors, the extremities of each blade forming the segment of a circle, and being placed at a somewhat acute angle to shaft" (Catal. Obstet. Soc., 1866, p. 108 and fig. 90). It greatly resembles Van Huevel's "Pince podalique, 1845," in Witkowski's "Arsenal," fig. 280, p. 53. Rizzoli found it unsatisfactory, and devised the next instrument, No. 70. *Royal Society of Medicine.*

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70. **Rizzoli's Foot Forceps.**

Length 10¼ in. (26.6 cm.); the ivory handle measures 4½ in. (11.4 cm.) across.

It consists of a hollow metallic stem bearing in its canal another stem which turns by means of an ivory handle. To the upper extremity of each stem is attached at right angles one-half of a metal ring. By opening the ivory handle, which is split and works on a hinge, the half-rings are parted and on closing the handle

they are made to meet so as to grasp the foot of the fœtus. Figured in Cat. Obstet. Soc., 1866, p. 108, fig. 91.

Rizzoli preferred this foot forceps to Van Huevel's, which he attempted to modify—as in the preceding sample, No. 69. He employed it when there was difficulty in drawing down the foot or applying a loop after turning. To make the hold more sure, he covered the metal ring with linen, ribbon, or gutta-percha. "I can declare that I have used this *tire-pied* several times with advantage, and also find it very useful for pushing back the prolapsed umbilical cord. Dr. Belluzzi has further employed it for the reduction of the prolapsed hand or forearm in a vertex presentation." "Clinique Chirurgicale: Mémoires de Chirurgie et d'Obstétrique, par le Professeur F. Rizzoli," Trans. by Dr. Andreini, Paris, 1872, p. 535. *Royal Society of Medicine.*

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71. **E. Nyrop's Foot Forceps.**

Length 15 in. (38.1 cm.); length of blades and their shanks to lock 5 in. (12.7 cm.). "C. Nyrop, Kjöbenhavn."

A solid steel forceps with an ordinary screw joint. The lower 4 in. (10.16 cm.) of the handles are bowed outwards and fluted, one handle ending in a finger-hook; the remaining portion of the handles are perfectly straight, and touch each other all along their course when the blades are closed. The blades are oval, concave and fenestrated with rough edges, and $1\frac{1}{2}$ in. (3.17 cm.) long. The upper blade is deeply notched from behind forwards.

This instrument mentioned and figured without any description under Foot Forceps, in Cat. Obstet. Soc., 1866, p. 107, and fig. 89, as "Dr. Districtslaege (Medical Officer of Health), B. Nyrop's forceps, invented in 1853, exhibited by C. Nyrop, Copenhaven."

Royal Society of Medicine.

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72. **Grönning's Foot Forceps.**

Length $15\frac{1}{2}$ in. (39.3 cm.), of metal bar $11\frac{3}{4}$ in. (29.8 cm.).
"Nyrop, Copenhagen."

A metal bar, about $\frac{3}{8}$ in. (0.9 cm.) diameter, fitted to an ebony handle, quadrangular, chequered and broadest at the free end. The bar turns up at its free extremity, forming an oval ring $\frac{5}{8}$ in. (1.5 cm.) in its transverse or wider diameter, to allow of the passage of a loop of tape.

Under *Foot Forceps* in Catal. Obstet. Soc., 1866, p. 107, there is this simple entry: "Dr. Grönning's, invented in 1815, exhibited by C. Nyrop, Copenhagen."

Royal Society of Medicine.

72A. **Barnes' Dilating Bags.**

Three Barnes' hydrostatic bags manufactured about 1866 or earlier. They represent the original pattern of the fiddle-shaped bags designed by Barnes in 1862. Later on he had the free end made much broader; other obstetricians devised similar bags with projecting corners at the free end, sometimes, as in Steele's, constricted so as to tuck in during introduction. These samples were exhibited at the Obstetrical Society's Conversazione in 1886, and presented to its Museum by Messrs. Maw and Son (Catal. Obstet. Soc., 1866, p. 227). The bags alone remain, the stop-cock and syringe having been lost while most of the tubing has perished.

Jardine Murray, in 1859, dilated the os in a case of placenta prævia by introducing a flattened air pessary and inflating it by means of syringe. Keiller, of Edinburgh, he admitted, had already used caoutchouc air-pessaries for dilatation in primiparæ and induction of premature labour. Storer induced labour in the same year by passing bags into the uterus and distending them with water. R. Barnes devised an instrument on the same principle, and employed it successfully in a case of placenta prævia centralis, April 1860. It was cylindrical; within two years Barnes "had one made of a fiddle shape." This was the original "Barnes bag," the type seen in these samples.

Barnes, explaining in full detail the instruments which he employed in the preparatory stage for the primary dilatation of the cervix, states that he first makes use of short metallic bougies, and "secondly, a series of cylindrical caoutchouc dilators, the introduction of which is facilitated by being mounted on a flexible metallic stem, a foot or more in length, and which can be withdrawn when the dilator is *in situ*, previously to distension with water. In the provocative and accelerative stages larger cylindrical bags are required; and to obviate a tendency which the cylindrical or pyriform bags have to slip out of the cervix, I have had one made of a fiddle shape, so that, when distended, the bulging out at either end maintains the instrument in the cervix, an increased pressure being exerted upon the two points of chief resistance, the os internum and the os externum uteri. (See Barnes, "On the Indications and Operations for the Induction of Premature Labour and for the Acceleration of Labour," *Trans. Obstet Soc.*, vol. iii, 1861, p. 132). At that date Tarnier taught that forced dilatation was "completely banished from obstetric practice" ("Des cas dans lesquels l'extraction du fœtus est nécessaire," Paris, 1860, p. 71). Champetier de Ribes first employed his 'ballon' in August 1887, as he states in his paper, "De l'Accouchement provoqué," *Annales de Gynéc.*, Dec. 1888, p. 403, which includes a note on a

similar appliance used by Tarnier in 1878, a tube, the blind or upper end of which could be dilated, but only to a very limited extent, after introduction into the uterus.

Robert Barnes includes drawings of his "hydrostatic bags and syringe" in his "System of Obstetric Medicine and Surgery," 1885, vol. ii, p. 508, the bags being of the later pattern, broad at the free end. In his "Lectures on Obstetric Operations," 1870, p. 107, he figures a bag "distended *in situ* within the cervix uteri," and describes at length the use of this contrivance for dilation of the cervix. "Water pressure is the most natural, the most safe, and the most effective. An os uteri that will admit one finger will admit No. 2 dilator in the collapsed state. The introduction is effected in this way: Insert the point of the uterine sound, of a male catheter, or any convenient stem, into the little pouch at the end of the bag; roll the bag round the stem, anoint it with lard or soap, then pass it into the cervix, guided by the forefinger of the left hand, which is kept on the os uteri. When the bag is passed so far that *the narrower middle part is fairly embraced by the cervical ring,* withdraw the sound, keeping the guiding finger on the os to insure the preservation of the bag *in situ*. Then pump in water gradually. Continue distending the bag until you feel it is tightly nipped by the os. When this is done, wait a while; close the stop-cock, and give time for the distending eccentric force to wear out the resistance of the cervix. . . . . From time to time inject a little more water, so as to maintain and improve the gain." The author continues, describing how a No. 3 should be substituted for a No. 2, etc. *Royal Society of Medicine.*

72B. India-rubber Air-Ball for Exciting Uterine Contractions. (Sir F. H. Champneys.)

Air-ball, when empty $3\frac{3}{8}$ in. (8.5 cm.), long; glass tubing $2\frac{1}{2}$ in. (6.35 cm.); rubber tubing $6\frac{1}{2}$ in. (16.5 cm.).

The donor described this contrivance in a discussion on "A Simple Maieutic for the Induction of Miscarriages or Premature Labour," by Dr. P. Horrocks, *Trans. Obstet. Soc.*, vol. xxxviii (1896), p. 170. He had, both at St. George's and at St. Bartholomew's Hospitals, been in the habit of using the ordinary children's penny air-balls for inducing premature labour. The neck of the ball (which was quite well made) was tied on to a catheter; the catheter was connected with india-rubber tubing, and the ball could easily be distended, either by gravitation or by a syringe, to any desired size."

This modification was used by the donor himself between 1900—1914. The india-rubber ball is so thin that it can be rolled

up to about the size of a lead-pencil and introduced, through the cervix, in the grip of a speculum forceps. It cost a penny and the glass and rubber tubing might cost about the same sum. The rubber is of good quality and can be boiled. The quantity of sterilized water required for distension to the desired size being first measured, that amount is introduced into the bag. The thinness of the rubber enables the ball, when distended, to adapt itself easily with but little displacement of the presenting part of the fœtus, and on account of its small size it may be used quite early in pregnancy, when larger bags cannot be passed into the uterus cavity. *Sir Francis H. Champneys, Bt.*, 1917.

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73. **Smellie's Perforator.**

Length 10½ in. (26.6 cm.); tip of blades to lock 2¾ in. (7 cm.); tip to shoulder 1½ in. (3.8 cm.). "Maw & Son."

Smellie, who recommended Mesnard's crotchet, substituted for his *perce-crâne* a pair of strong scissors with stops at the shoulders to prevent the blades from going too deeply into the cranial cavity. This sample is, in essential particulars, a typical "Smellie's perforator." The shoulder, flange, or stop below the blade is Smellie's special device. The outer edges, in this sample, are somewhat blunted, so that the mother's parts should not be wounded, whilst the inner edges, being sharp, may be used to trim the perforated cranial bone of the fœtus. The ring handles project inwards, so that the shanks of the handles are wide apart below when the rings are brought into contact. Scissor-lock, *i.e.*, screw with block on handle side. "When closed, the two blades form a spear-shaped head for perforating. After piercing the skull, the handles are forced apart, which opens the blades and extends the fissure in the skull. The ring-handles render the instrument weak, as it is difficult to push steadily or strongly upon objects affording such an uncertain grasp." (Cat. Obstet. Soc., 1866, p. 164.) In some modified patterns of Smellie's perforator the blades increase in thickness to the inner margin where they do not cross, as in this typical sample, but come in contact, as in some other perforators in this collection.

The most primitive form of Smellie's perforator is represented in his "Treatise on the Theory and Practice of Midwifery," Ed. 1779, Pl. 39. "It represents the scissors proper for perforating the *Cranium* in very narrow and distorted *Pelvises*. They ought to be made very strong, and nine inches at least in length, with stops or rests in the middle of the blades, by which a large dilatation is more easily made." The instrument figured by Smellie is like an ordinary pair of scissors with a very small 'stop,' a thin

piece of metal about a quarter of an inch long, rounded at its free end, projecting from the outer border of each blade. There is no stout projecting shoulder, as in the instrument here preserved. The ring handles, as in this sample, project inwards.

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74. **Denman's Perforator (I).**

Length 11½ in. (29.2 cm.); tip of blade to lock 4 in. (10.16 cm.); length of cutting blades from tip to shoulder 1½ in. (3.8 cm.).

"T. Weedon."

The first important modification of Smellie's perforator. Orme invented a similar instrument with long shanks to the blades which were curved laterally, not on the flat. Denman, as this sample demonstrates, made the blades prismatic, curving on the flat; their inner surfaces, broad and flat, only meet at the tip when closed, and are roughened for half an inch (1.27 cm.) from the tip to aid in the removal of small pieces of bone. Denman also lengthened the handles and made their rings to project outward only, so that the shanks of the handles are almost parallel when closed. The shanks of the blades, between lock and shoulder, are made over an inch and a half (3.8 cm.) long. Block screw joint (block both on blade and handle side). See also No. 338.

Penrose Williams, Esq., 1912.

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75. **Denman's Perforator (II).**

Length 11 in. (28 cm.); tip of blades to lock 4 in. (10.16 cm.); length of cutting blades 1¾ in. (4.4 cm.).

"Evans and Co., London."

A similar instrument but somewhat shorter. These perforators were and are often made smaller than their original types, for convenient inclusion in bags. The blades are less curved than in the preceding sample and their inner surfaces are roughened near the point. The ring handles are of the old-fashioned type seen in Smellie's perforator, so that the shanks of the handles are not parallel when closed. Block screw joint as in No. 74. See No. 338.

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76. **Denman's Perforator (Radford's Modification).**

Length 9½ in. (24.1 cm.); tip of blades to lock 3¼ in. (4.4 cm.).

No name of maker.

This perforator resembles Denman's II (No. 75) except that the blades are straight and, when closed, part considerably below the points, so as to give greater strength to the point itself. The inner surfaces are not simply roughened, but are deeply grooved

for over an inch (2.5 cm.) below the points. The shanks of the handles are still more expanded than in Denman's II and Smellie's, the rings, though they turn inwards, not even touching. Block screw joint as in Nos. 74, 75.

"Another *Perforator*, exhibited by Dr. Radford, differs from Denman's in having the perforating extremity straight." (Cat. Obstet. Soc., 1866, p. 164.) The above quotation most probably refers to this sample. Although the ring-handles project inwards, as in Smellie's, and the blades are straight, the essential feature of Denman's perforator, the prismatic blades, is present.

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77. **Rizzoli's Scissor Perforator.**

Length 10$\frac{1}{4}$ in. (26 cm.); tip of blades to lock 4 in. (10.16 cm.); length of cutting blades 1$\frac{3}{8}$ in. (3.5 cm.). "Fli Lollini."

Rizzoli writes: "When I undertake craniotomy on the vault of the skull I make use of the following treatment. This craniotome is 28 cm. (11 inches) in length. Near its upper extremity it ends in two stout triangular blades with cutting outer borders gently turned up at the point. The blades are 5 cm. (2 in.) long, and 1 cm. (2.5 in.) broad at the base. They bear a shoulder which allows the operator to know how deeply they have entered the cranium and protect the maternal soft parts as the blades are being parted." ("Memorie Chirurgiche ed Ostetriche," p. 469, Pl. xxi, Fig. 1.)

A modified Denman's perforator, but the shanks are crossed and superimposed; they bear a block 3 in. (7.6 cm.) below the lock and flattened as in scissors, instead of being parallel as in Denman's, allowing of more powerful expansion. The lock is of the Charrière-Péan take-apart type, one blade is super-imposed on the other, crossing it three inches above the handles and over three below the lock. This instrument, presented to the Obstetrical Society by Rizzoli, is of smaller proportion than that which he described in his "Memorie," measuring 26 cm. instead of 28 cm.

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78. **Holmes's Perforator.**

Length 12 in. (30.5 cm.); tip to lock 5 in. (12.7 cm.); length of cutting blades, tip to shoulder 2$\frac{1}{8}$ in. (5.4 cm.).

"Evrard, 32, Charles Street, Middlesex Hospital."

Holmes modified the perforator in the manner seen in this sample. The blades bear a guard or shoulder, one has a solid double prism point and the other a short wedge-shaped piece, completing the solid point or perforator. They are slightly curved

on the flat and spring from parallel shanks $2\frac{1}{4}$ in. (7 cm.) long ending below in a circular screw joint with cross handles. The rings are discarded and replaced by a palm-rest formed by the chequered ivory coating on the lower part of the handles. This mechanism affords great power for breaking down the cranial bones. To enable the point to act with full force a stout, straight metal cross-bar $2\frac{3}{4}$ in. (7 cm.) long is inserted between the handles, locking them and giving greater rigidity to the whole instrument.

This sample was formerly the property of Dr. Robert Greenhalgh, Physician-Accoucheur to St. Bartholomew's Hospital, who modified it.

Greenhalgh's perforator resembles this instrument, but a Simpson's jointed bar (see No. 81) is substituted for the movable bar, and the blades are constructed so as to form a double or quadrangular perforating wedge. See Cat. Obstet. Soc., 1866, p. 165. The modifications of Holmes's instrument are very numerous and the metal bar arrangement has been ascribed to Ould (Witkowski, "Arsenal Obstétrical," Fig. 742, p. 117), but is not mentioned in his works.

Presented by Sir Francis H. Champneys, Bt., 1913.

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79. **Rigby's Perforator.**

Length $11\frac{1}{2}$ in. (29.2 cm.); tip of blade to lock $4\frac{1}{2}$ in. (11.4 cm.); tip to shoulder $1\frac{1}{2}$ in. (3.8 cm.). "Matthews, London."

The limbs are united by a hinge-joint and do not cross. There is a spring between the handles which are both straight, and, in order to keep the instrument locked during introduction, a broad, straight steel bar is attached by a hinge to the extremity of one handle, thus forming a lock. Witkowski, "Arsenal Obstétrical," fig. 727, p. 116, represents Naegele's *perce crâne* as the first instrument of its kind to bear the solid bar which keeps the handles open, it is not, however, straight, as in Rigby's, but curved with the convexity downwards. It seems that this instrument was also the first in which a spring was placed between the handles. The blades are prismatic and curved, after Denman. In some early patterns of Rigby's perforator the blades were of the Smellie type.

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80. **Rigby's Perforator with Holmes's Blades.**

Length 11 in. (28 cm.); tip of blade to lock $4\frac{1}{2}$ in. (11.4 cm.); tip to shoulder $1\frac{1}{2}$ in. (3.8 cm.). "Coxeter and Co."

On opposite blade "23, Grafton Street East."

This instrument resembles Rigby's perforator in its blades which do not cross, its hinge-joint, its spring between the handles

and the straight steel bar attached by a hinge to the end of the handle and fitting into the end of the opposite handle. On the other hand, the blades are of the Holmes type (No. 78) with the solid point on one blade only. The handles are slightly convex outwards.

Penrose Williams, Esq., 1912.

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81. **Sir James Simpson's Perforator.**

Length 12 in. (30.5 cm.), from tip of blades to joint in steel bar between handles; tip to lock 6 in. (15.24 cm.); length of cutting blades 1 in. (2.5 cm.). "Maw and Son, London."

Sir James Y. Simpson ("Clinical Lectures on the Diseases of Women," vol. iii, 1872) states (p. 526) that he used for many years a perforator which worked better than Smellie's. The blades of the instrument can be separated by the simple approximation of the handles, and as this can be effected with one hand whilst the other guides and guards the point of the instrument, every kind of assistance from another practitioner, or from the nurse, can be dispensed with. As compared with Naegele's instrument, of which it is a modification, it has, you will observe, this improvement—that the ends of the handles are kept apart during the introduction of the point through the skull by means of a hinged bar, which allows of the easy approximation of the handles, and consequent separation of the blades, without rendering it necessary for the operator to stop, after the instrument has pierced the skull, to unclasp the straight solid bar which in Naegele's instrument is used to keep asunder the extremities of the handles. In addition to the change in the bar, I have usually had this perforator made in (*sic*) its cutting edges or sides so as to leave an angled indentation at the base of each of these sides. These lateral indentations tend to prevent the points and edges slipping out of the skull when the instrument is opened, an accident which has sometimes happened under the use of the common forms of perforator, or perforating scissors."

The blades are shouldered, prismatic, and curved on the flat, with moderately sharp cutting edges externally. They meet along their thick internal borders. The shanks of the blades are superimposed and are four inches (10.16 cm.) in length, from the shoulder to the lock, which is of the scissors type, bearing a block on the handle side. There is, as in Rigby's perforator, a spring between the handles which are slightly convex outwards, and are, as explained in the above quotation, kept open by a jointed steel bar which forms a rest for the hand whilst pushing or rotating the instrument in perforation. The joint of the bar closing outwards allows the handles to be brought together, thus opening the blades. By pressing the joint inwards, the points are locked.

(Galabin and other obstetricians preferred the joint to close inwards.) In the Cat. Obstet. Soc., 1866," p. 166, it is stated that Simpson's perforator essentially resembles Naegele's, the jointed bar opening outwards being the peculiar feature in Simpson's instrument. Simpson (see above) speaks of the bar in Naegele's perforator as straight and solid. See note to Rigby's perforator, No. 79. *Royal Society of Medicine.*

81A. **Sir James Simpson's Perforator (II).**

Marked "I. Pratt."

This instrument is identical in measurements with No. 81.

Dr. Amand Routh, 1914.

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82. **Matthews's Perforator.**

Length 14½ in. (36.8 cm.); the sliding guard can be made to project ¾ in. (0.6 cm.) beyond the point of the perforator; tip to lock 5 in. (12.7 cm.); length of cutting blade 1¼ in. (3.17 cm.).

"Matthews, London."

"Dr. Playfair exhibited for Mr. Matthews, the surgical instrument maker of Portugal Street, a guarded perforator invented by him. It consisted of an ordinary perforator with a sliding metal guard, which could be pushed up and down so as to protect the vagina from the cutting edge of the perforator during insertion. Mr. Matthews has presented a specimen of this instrument to the Museum of the Society." *Trans. Obstet. Soc.*, vol. xii (1870), p. 117. As in the perforator designed by Blot, Durroch, and others, the handle of one blade is straight, whilst that of the other blade is bent outwards to form a lever. A steel spring, fixed at one extremity to the end of the straight handle (which is made of chequered wood and is 4 in., or 10.16 cm., in length) runs forward and fits into the lower extremity of the shank of the lever blade at the angle formed by its handle. The shanks of the two blades and the guard unite and cross at the lock which is of the Charrière-Péan type. The bent handle, made of metal continuous with the shank of its blade, acts as a lever of the first class, the hand applied to it being the power, the lock the fulcrum, and the weight or resistance the fœtal skull.

The blades, as in Denman's typical perforator, are prismatic, being thickest along their inner limits which in this instrument, however, lie in contact throughout their whole length when closed. The blades are shouldered and bear a groove immediately above the shoulder, as in Simpson's instrument. At the level of the shoulder, a steel peg about ¼ in. (6.8 cm.) projects from the inner margin of the lever blade at the level of the shoulder. This peg fits into a hole in the opposed inner surface of the straight handled

blade so as to ensure the firm fixations of the two blades. The guard is a flat piece of steel 8 in. (20.32 cm.) long, which slides in a long groove in the lever blade below the lock, and a concave metal finger-piece is attached to its free end. The opposite end of the guard is spear-shaped and broader than the cutting part of the blades which it entirely covers until it is drawn down by the operator's forefinger placed on the concave piece of metal. Then the cranium can be perforated and by pressing on the lever handle the orifice in the skull is enlarged.

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83. **Assalini's Trephine-Perforator.**

A metal tube 8 in. (20.32 cm.) long ending in a serrated free border, as a trephine. A cylindrical piece of wood 10$\frac{1}{4}$ in. (26.6 cm.) in length fits into the metal tube and bears a screw perforator at its upper end. "Fli Lollini, Bologna."

"Assalini seems to have been the first to apply the trepan to obstetric practice. His instrument was described in 1810, and formed one of the collection submitted by him to the Institut National de France in that year. He thus describes it in his work: 'Nuovi strumenti per estrarre un feto morto e macerato al di sopra d'una pelvi deforme e stretta' (Milan, 1811). In a first degree of difficulty, when the conjugate diameter was under three inches, he used an instrument consisting of—1st, a cannula, which he applied to the head; 2nd, a trepan, having both a gimlet perforator and a circular trepan saw which, passed up through the cannula, would take out a piece of bone." Cat. Obstet. Soc., 1866, p. 169. Also figured in Gervasoni's notes on Assalini's instruments, Pl. 2. (See No. 108.)

A screw perforator is fitted on to a cylindrical wooden stem. The skull, being perforated and fixed by the screw, the trephine is then drawn forwards and by circular motion cuts a portion of the skull, through which is inserted the blunt end of the tire-tête, a sample of which is preserved in this collection (No. 87).

This sample (presented to the Obstetrical Society by the makers, Bros. Lollini) was exhibited in 1866 by Professor Lazzati of Milan, then Fellow of the Society. It is a modification of the original pattern described above, as the "cannula" bears at its free end the "circular trepan saw," whilst the "gimlet perforator" is fixed on to the wooden cylinder, over which the cannula can be passed and the trephine set in action after the screw or gimlet-perforator has been driven into the skull. While Jörg was devising an instrument of this kind, suggesting it in 1807 and 1812, Assalini brought out this perforator. See Cat. Obstet. Soc., 1866, *loc. cit.*, and fig. 163. *Royal Society of Medicine.*

84. Jörg-Braun's Trephine-Perforator.

One foot (30.5 cm.) in length.

"Krohne & Sesemann, London."

This trephine works in a gun-metal tube by means of a crank-handle and a jointed rod. It is a short steel tube bearing at its free end teeth, which, unlike the teeth in the more modern pattern, are wedge-shaped and sharpened on the inner slope, thus forming a cutting edge as they revolve. An immovable double-screw perforator projects a little beyond the trephine to keep the fœtal cranium fixed whilst the trephine revolves.

Jörg of Nüremburg stated in his "Systematic Handbook of Midwifery," published in 1807, that a head perforator might reasonably be constructed after the fashion of a trepan and be provided with a sheath. Assalini, shortly after 1807, invented his perforator (a sample of which is preserved in this collection (No. 83). Jörg gave the first detailed description of his own instrument in the second part of his "Schriften zur Beforderung der Kenntniss des menschlichen Beckens," repeated in his Systematic Handbook edition of 1833.

This instrument, when in the Obstetrical Society's museum, bore a label "Trepanförmiger Perforatorium von Hofrath Dr. Jörg in Leipsig 1811." It was made in London. This perforator has been ascribed to Wilde (Witkowski, "Arsenal Obstétrical," Figs. 765, 766, p. 120) and to Liesning and Braun, *ib.*, Fig. 770; in Fig. 768 the jointed rod arrangement is given and ascribed to Braun. Witkowski apparently disagrees with Kilian as to nomenclature. The latter in his "Armamentarium Lucinæ," Pl. xxxvii, Figs. 3 and 4, figures two Jörg's trephine perforators, both straight and worked with a piston, but no crank. Kilian (*ib.*, Fig. 5) figures his own instrument, also straight, but with a crank. He represents Wilde's trephine perforator, (Pl. xxxix, Figs. 3 and 4, also in Witkowski, *loc. cit.*), very like this instrument, but less sharply curved. Witkowski's *perforateur trépan* seems identical with the sample here on view, as does Fig. 165 in Cat. Obstet. Soc., 1866, p. 170, described as Messrs. Weiss and Son's modification of the trepan perforator. *Royal Society of Medicine.*

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85. Dugès' Terebellum Trephine-Perforator (Rizzoli's Modification).

Length 12½ in. (31.75 cm.); length of trephine perforator 1½ in. (3.8 cm.). "Lollini."

A steel bar mounted on an ivory handle, fluted longwise, and bearing at its extremity a "terebellum," a broad, hard, conical, free-cutting screw after Dugès' pattern. Rizzoli employed it

(" mia piccola trivella ") for craniotomy on the after-coming head when his own craniotome (preserved in this collection, No. 82) could not be properly adjusted. He objected to Dugès' terebellum, which was of the same pattern, but longer, as in podalic deliveries, where the greater part of the fœtus lies in the pelvis, a big instrument will endanger the soft parts (see Rizzoli, *loc. cit.*, No. 77). Dugès' terebellum (Kilian, " Armamentarium," Pl. xxxviii, fig. 1, and Witkowski, fig. 755), was larger. This sample, however, although presented by Rizzoli to the Obstetrical Society, is larger than the sample described by him. (The measurements he gives are: Length $7\frac{1}{8}$ in., or 18 cm., length of perforator under 1 in., or 2.3 cm.) Perhaps the original instrument proved too small. The perforator is of the same type as Lollini's (No. 120) which is fitted on to special long forceps. Having no guard, it would be a dangerous weapon in the hands of a novice.

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86. **Rizzoli's Tire-Tête Perforator.**

Weight $5\frac{1}{2}$ oz. (156 grms.); length $13\frac{1}{2}$ in. (34.3 cm.); length of metallic stem $9\frac{1}{4}$ in. (23.5 cm.); of cutting blade $\frac{3}{8}$ in. (0.95 cm.); of tire-tête bars $1\frac{3}{4}$ in. (4.4 cm.). " Fli Lollini."

Rizzoli preferred this instrument " mio craniotomo tira-testa," when the after-coming head has been accidentally or purposely detached from the body. A sharp-pointed, lance-like head with cutting edges projects at the end of a flat steel stem mounted on an ivory handle. Two cross bars of steel, parallel to each other in front and behind the stem to which they are united by a screw passing through their middle portion, lie below the cutting part of the instrument. The screw, as in Assalini's tire-tête (No. 87), is connected with a steel rod which runs in two mounts on the back of the steel stem and is worked by a finger ring at its lower end, near the handle. When the ring is pushed upwards, the cross-bars lie with the long axis corresponding to that of the stem. Then the perforator is put into use. "Often some vertebræ remain connected with the head and in that case the ordinary tire-têtes do not pentrate the cranial cavity easily. My tire-tête penetrates with ease, and when it has been pushed beyond its movable part the handle is held steadily in the left hand and the ring is drawn down with the finger." (Rizzoli, " Memoires de Chirurgie et d'Obstétrique "—Andreini's translation, p. 541.) The cross-bars are brought by this manœuvre into a position transverse to the stem, so that they can serve as a *tire-tête*. The rod then abuts on the hilt of the stem, but the cross-bars are not securely fixed.

This instrument is a little smaller than that described by Rizzoli,

which is figured with a roughened wooden handle turned up at the free end. Rizzoli states that it was first described in a paper published in 1852. It is figured (Fig. 202, p. 205) in the Cat. Instr. Obstet. Soc., Lond., 1866, with a brief description.

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87. **Assalini's Tire-Tête.**

Weight 7 oz. (198 grms.); length from the extremity of the handle to the blunt end of the steel bar when in a line with the stem, ready for introduction into cranium, 16 in. (40.6 cm.); length from the extremity of the handle to free border of bar when at right angles to the stem, after introduction, 15 in. (38.1 cm.); the steel stem is mounted on a four-sided chequer wooden handle 4 in. (10.16 cm.). "Lollini."

A steel bar $2\frac{1}{4}$ in. (5.7 cm.) in length is mounted on to the end of a steel stem about 11 in. (28 cm.) long, attached to a steel rod which slides along two mounts on the stem and is connected with the bar above. When the finger-ring on the rod is pulled down, the bar lies with its long axis in a line with that of the stem, so that its blunt end may be introduced into the aperture made by Assalini's trephine-perforator. By pushing the finger-ring upwards the steel bar becomes transverse, and can be firmly locked by pressing the finger-ring against a notch at the lower end of the stem. Then the skull is drawn downwards. A sample of the corresponding trephine-perforator is included in this collection (No. 83). Assalini rotated the steel bar after its introduction into the cranial cavity, so as to break up the brain. When the head was brought into the vagina, he seized it with his fingers, the instrument having no great power as a tractor.

See Cat. Obstet. Soc., 1866, p. 205. It is figured in Assilini's original work and in Gervason's notes on Assalini's instruments, Pl. ii. See No. 108. Luke designed a similar but smaller instrument as a conductor for the knife when a lateral lithotomy wound required enlarging (G 135).

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88. **Rizzoli's Tire-Tête.**

Weight $6\frac{1}{2}$ oz. (184 grms.); length from handle to end of steel bar, when in line with the stem, $13\frac{1}{2}$ in. (35.65 cm.); length from handle to free border of bar at right angles to stem $12\frac{1}{2}$ in. (31.75 cm.). "Botschan, 35, Worship Street."

This instrument is similar to Assalini's *tire-tête* in its mechanism, but in place of the wooden handle its lower end forms a cross-bar $3\frac{1}{4}$ in. (8.2 cm.) long which is not parallel with, but at

right angles to, the tire-tête bar, and the latter is worked by a thumb-piece instead of a ring. Rizzoli retained the ring for his *tire-tête* perforator, a sample of which is included in this collection (No. 66). *Royal Society of Medicine.*

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89. **Rizzoli's Tire-Tête Forceps.**

(Pinzette Tiratesta.)

Weight 11½ oz. (328 grms.); length 14½ in. (36.8 cm.); length of largest blade to lock 6½ in. (16.5 cm.). "Lollini."

This instrument is made entirely of steel nickel-plated. French Levret-lock detachable by thumbpiece adjusted to slot. Handles with rings, as in scissors, and long, solid, straight shanks. The short blade, slightly curved, is made to be passed into the skull. The longer blade is strongly curved and constructed so that it may be passed outside the skull; the blades are then locked and the instrument is used as a forceps. Described by Rizzoli ("Memorie Chirurgiche ed Obstetriche," p. 470) under "Istrumenti Ostetrici per la fetotomia." The handles, according to the author's drawing, bear a rack and pinion.

This instrument was included in the box made for Rizzoli's cephalotribe with reversible blades (No. 118).

Royal Society of Medicine.

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90. **David Davis's Double-curved Craniotomy Forceps.**

Weight 1 lb. 5½ oz. (610 grms.); length 14 in. (35.6 cm.); length of blades to lock 8½ in. (21.5 cm.). "Ferguson, Lond."

This instrument is not figured in D. D. Davis's "Elements of Operative Midwifery" (1825), nor in his "Principles and Practice of Obstetric Medicine" (1836). In 1817 there was a discussion about priority between Dr. Davis and Mr. Richard Rawlins, of Oxford. The latter claimed to have invented "the reflected forceps for delivering the heads of children in their birth." The correspondence was carried on in the "Medical Repository." The Editors published (*loc. cit.*, vol. viii, 1817, p. 214) a plate, with a complete description representing D. Davis's "Single-curved Craniotomy Forceps," and his "Double-curved Craniotomy Forceps." The single-curved instrument in size, position of lock, and curve of blades, resembles D. Davis's "Guarded crotchet with triangular teeth" (No. 92), but the teeth are not big and triangular, they are fixed in the upper, not the lower blade, and the mechanism for receiving them on the lower blade is similar to that in this instrument (No. 90), and in Conquest's (which see: Dr. Conquest admits that his "blades are constructed as in Dr. Davis's"). The

drawing of the "double-curved craniotomy forceps" corresponds to this instrument (No. 90):

(1) In length (being drawn of the natural size), and in the proportion of handles to blades.

(2) In its lock (English or Smellie type).

(3) In its marked projection of the extremity of the upper over that of the lower blade when the handles are closed.

(4) In the fact that a piece of steel is let into the lower blade and bears perforations to admit the teeth on the opposed upper blade.

On the other hand, in the drawing:—

1. The second curve is sharper than in this sample, No. 90, especially where the shanks meet the blades, and the latter are relatively longer than the shanks; together the blades and shanks measure $8\frac{1}{2}$ in. (21.5 cm.), as in this sample.

2. The inner surfaces of the blades are not identical, as the upper blade bears 17 small teeth, whilst in this instrument there are but 4 teeth, and they are large, and the piece of steel let into the lower blade has consequently only four holes; the spaces between the holes are simply, as stated in the explanatory letter-press, "made rough after the manner of a rasp in order to prevent the slipping of the blade along the polished interior of the fœtal skull." In this instrument there are deep transverse grooves cut in the piece of steel and also on the inner surface of the upper blade.

3. Instead of the stout iron nut, on the inner surface of the handle of the lower blade close to its extremity fitting into a corresponding perforation in the opposite handle, there is a "brass nut" one inch above the extremity of the handle. (D. Davis states that this nut contrivance was suggested by Botschan, the maker, "to admit of greater play at the joint and at the same time to insure the accurate adjustment of the grasping surfaces)".

The handles are coated with roughened ivory and bear a big palm-rest, and a slight shoulder near the lock. It suggested to Conquest the forceps (Nos. 94, 95), which are known by his name and often inaccurately written of as his invention, but D. Davis does not appear to have found his own contrivance satisfactory, as he describes and figures a different instrument, his "Guarded Crotchet with triangular teeth" (No. 92), in his standard work, "Elements of Operative Midwifery."

Sir Fancis Champneys, Bart., 1913.

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91. **David Davis's Craniotomy Forceps or Guarded Head Crotchet.**

Weight 1 lb. 4 oz. (567 grms.); length $13\frac{1}{4}$ in. (33.6 cm.); length of crotchet $7\frac{1}{2}$ in. (19 cm.); length of guard 6 in. (15.24 cm.).

Designed for the completion of delivery after perforation. The crotchet blade is to be passed up into the pelvis and applied to the outside of the head which it is made to transfix. The guard counterpart of the instrument is passed through the perforation into the interior of the fœtal cranium and then firmly adjusted to the shank of the crotchet at the lock; in consequence of which the rounded free end of the guard is brought against the fangs of the crotchet, protecting adjacent parts during extraction. (David Davis, "Operative Midwifery," p. 291 and Pl. xiii.)

This instrument, generically, though not as now understood, a craniotomy forceps, has its handles flattened laterally and lined with ebony. Palm-rest, slight shoulder, English lock; crotchet with blunt end and three prongs, each over an inch (2.5 cm.) long, turned down sharply. Guard ends in a hollow metal loop about $1\frac{1}{4}$ in. (3.17 cm.) vertical measurement, with a broad upper surface $\frac{3}{4}$ in. (1.9 cm.) bent somewhat forwards.

Strictly speaking, this is a crotchet pure and simple, being meant to fork or crook the head or spine, the guard protecting the points when introduced; it is not really what is now understood as a "craniotomy forceps." See note to 136, Radford's Crotchet.

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92. **David Davis's Guarded Crotchet, or Craniotomy Forceps with Triangular Teeth.**

Weight 1 lb. $5\frac{1}{2}$ oz. (603 grms.); length 14 in. (35.6 cm.); blades to lock $8\frac{1}{2}$ in. (21.5 cm.). "Botschan, London."

This instrument, like the same obstetrician's "Guarded Head Crotchet" (No. 91), is a variety of craniotomy forceps, though more essentially a crotchet. In the former instrument, the crotchet blade transfixed the fœtal head from the outside. Davis observes, however, in his "Elements of Operative Midwifery": "But it has been pretty generally the practice in this country, for several years past to fix the crotchet into the skull from within its cavity; I have thought it my duty to consider of some method of meeting this general preference, without losing sight, at the same time, of the security to be derived from an effectual guard."

The under blade is the crotchet, its extremity is rounded and blunt, and furnished with a short, strong tooth simply bent downwards, the inner surface of the blade is smooth and bears two more teeth about an inch (2.5 cm.) below the first, each at the edge of the blade and turned sharply downwards. The upper blade which projects beyond the extremity of the lower, as in No. 90, acts as the guard. "The purchase part of the guard is hollowed out in the manner of a spoon, and perforated with three oval holes, so situated respectively as to correspond with the prongs of the crotchet.

Between and posterior to these apertures, are fixed two pieces of steel (in this sample one piece with two transverse bars connected by a vertical bar) which rise from the bottom of the blade a little above the level of its edges. Their surfaces are made rough like those of a rasp. The use of these projections, it may be easily understood, is to apply on the fœtal scalp a pressure, counter to that made on the skull by the teeth of the crotchet, in order to ensure the penetration of the latter without the possibility of their slipping, without purchase, along the smooth cranial bones, or of failure from any other cause whatsoever." After the use of the scissors or perforator, the crotchet is introduced into the skull and the guard blade passed up and applied to the corresponding part of the head on the outside. A full account of this instrument with illustration, will be found, *loc. cit.*, pp. 293–5, and Pl. xiv. See also description of No. 90. *Royal Society of Medicine.*

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93. **Holmes's Craniotomy Forceps.**

Weight 14 oz. (397 grms.); length 13 in. (33 cm.); blade to lock 5 in. (12.7 cm.). "W. Matthews."

This instrument, made of steel nickel-plated, somewhat resembles David Davis's "guarded crotchet with triangular teeth" (No. 92), but the handles are much longer with a screw block-lock, the blades spring from the lock without any shanks, and the end of the crotchet blade projects beyond that of the guard blade. The crotchet blade bears on its inner surface (which is perfectly smooth) three short teeth, curved only slightly downwards; the teeth are not part of the metal of the blade, but are fixed into holes punched out of it. The teeth lie along the middle of the blade an inch (2.5 cm.) apart, and the highest tooth is an inch (2.5 cm.) below the point of the blade, which is rounded, and perfectly smooth; it projects $\frac{3}{8}$ in. (9.5 cm.) beyond the guard-blade when the handles are closed. The guard-blade, like that in D. Davis's "Guarded crotchet," is perforated with three holes so situated as to correspond with the prongs of the crotchet blade. Its inner surface bears deep transverse grooves from the tip to a little below the lowest tooth. The handles are lined with chequered ebony.

This instrument, known in the trade as "Holmes's Craniotomy Forceps with screw block-lock," appears to be an improved form of David Davis's guarded crotchet, No. 92. It does not correspond in any way to Conquest's (No. 94) or Ramsbotham's (F. H. Ramsbotham, "Principles and Practice of Obstetric Medicine and Surgery," 5th Ed., 1867, p. 309), nor to two craniotomy forceps drawn by D. Davis in an article "On the Craniotomy Forceps of Dr. Davis," *London Medical Repository*, vol. viii, p. 214.

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94. **Conquest's Craniotomy Forceps (I).**

Weight 1 lb. 4 oz. (567 grms.); length 13 in. (33 cm.); length of blades to lock $4\frac{3}{4}$ in. (12.1 cm.). "Aitken, York."

Made of nickel-plated steel. Dr. Conquest thus describes his instrument in "Practical Remarks on Obstetric Instruments," *London Medical Repository,*" vol. xiii, March 1st, 1820, p. 192 and fig. 4: "This instrument is *twelve* inches in length. The blades are constructed as in Dr. (David) Davis's. The one which is applied externally to the cranium, and which is hollowed out, has fixed into it *twelve* sharp teeth, not rising above its edges. This blade is four inches and a half in length from its point to the joint of the instrument, being most judiciously recommended by Dr. Davis to be half an inch longer than the inner blade to carry up any pendulous part of the os uteri, which might otherwise be included in the grasp. The opposite blade, which is to be introduced within the cranium, is only four inches in length: its hollow is filled with a piece of steel, having a convex surface perforated with twelve holes to receive the angular points of its antagonizing blade; so that when the cranium is fully pressed between them, the teeth transfix it, and secure a very commanding hold. The *shanks* are five inches in length, and curved, the concavity corresponding with the curve of the blades. This construction is intended to accommodate the instrument to the perineum in those cases in which it must be endangered by pressure if the shanks were straight, in consequence of the necessity which may exist for carrying the blades over and anteriorly to the pubes; thus this one instrument becomes adapted at once for ordinary cases, and to such as present unusual difficulty. The parts which may strictly be called the handles are not more than two inches and a half in length."

This instrument corresponds to the standard sample above described, excepting that it is a little longer and its blades are more uniformly elongated. The upper blade bears ten teeth, instead of twelve. The instrument mainly differs from David Davis's craniotomy forceps in the lock, which is of the ordinary scissors type, not the English forceps lock, and in the shanks being below the lock so as to form part of the handle. The mechanism of the blades were designed by David Davis: see description of his Double-curved Craniotomy Forceps (No. 90).

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95. **Conquest's Craniotomy Forceps (II).**

Weight $12\frac{1}{2}$ oz. (354 grms.); length 12 in. (31.75 cm.); length of blades to lock $4\frac{1}{2}$ in. (11.4 cm.).

"Bots" over "Chan" in handle.

This craniotomy forceps, made by Botschan, of Worship Street, is much shorter and lighter than the preceding instrument. It comes nearer to the original forceps figured and described by Conquest, the blades appearing precisely similar in shape. It was preserved in a box, once in use in the City of London Hospital, presented to the Obstetrical Society of London by the Hospital authorities in 1883, and now in this collection (No. 338). The box contained the Conquest's Obstetric forceps (No. 16).

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96. **Craniotomy Forceps after Conquest.**

Weight 11½ oz. (326 grms.); length 1 ft. (305 cm.); blades to lock 4½ in. (11.4 cm.). "Settle."

A modification of Conquest's instrument, having the long-shanked handles, scissors-lock, teeth (ten), in upper blade with a convex plate perforated to receive them in the lower blade (after David Davis's original pattern), and the end of the upper blade protruding over its fellow. On the other hand, the shanks are straight and the forceps is very light.

Penrose Williams, Esq., 1912.

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97. **Lever's Craniotomy Forceps.**

Weight 9½ oz. (269 grms.); length 12 in. (30.5 cm.); length of blades to lock 4 in. (10.16 cm.). "Matthews, Lond."

A more modern type, still lighter than Conquest's, similar in its long-shanked handles and in its lock. The handles, unlike those of Conquest's original type, are quite straight; they bear a steel spring between their inner surfaces. The end of the upper blade does not project beyond that of its fellow. On their inner surfaces both blades are concave and deep notched along their edges.

Witkowski ("Arsenal Obstétrical," Fig. 925, p. 144) figures this instrument without the spring between the handles as *Cranioclaste de Lever.*

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98. **Scanzoni's Cranioclast (Modified).**

Weight 1 lb. 7½ oz. (666 grms.); length 14 in. (35.6 cm.); of blades 9 in. (22.8 cm.); greatest breadth of blades 1⅛ in. (2.85 cm.). "Charrière: Robert et Collin."

This instrument is entirely made of nickel-plated steel. The limbs are parallel and united by a mortise lock just above the ends of the handles which bear at their extremities rectangular hooks, convenient for traction, well bevelled on their upper surface, and file-cut on their under surface. The blades are non-fenestrated, and, when closed, meet at their points, which are slightly incurved.

The pelvic curve is marked. The inner surface of each blade is deeply hollowed out for five inches internally, and bears three elevations like nail-heads, lying in a line between the tip and the shank, to increase the crushing power. The shanks are stout and well rounded.

The crushing power is produced by means of a screw, terminating in a steel cross-bar three inches (7.6 cm.) long, and working in a female screw the base of which travels along a rising bed, thus increasing its power in proportion to its proximity to the blade.

Presented to the Obstetrical Society as a "Braun's cranioclast." It is quite different from the instrument known by that name (Witkowski's "Arsenal Obstétrical," Fig. 911, p. 143, and A. R. Simpson, "Basilysis," *Edin. Med. Journ.*, April, 1880, and "Contributions to Obstetrics and Gynæcology," Fig. 51, p. 329). It more resemble's Scanzoni's cephalotribe (Witkowski, *loc. cit.*, Fig. 837, p. 129, and A. R. Simpson, *loc. cit.*, Fig. 48, p. 326), but the screw and cross-bar mechanism is different and Scanzoni's bears finger-rests near the lock, not rectangular hooks at the ends of the blades. *Royal Society of Medicine.*

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99. **Simpson's Craniotomy Forceps or Cranioclast (I).**

Weight 1 lb. 1 oz. (482 grms.); length 13 in. (33 cm.); length of blades to lock 6 in. (15.24 cm.). "Maw & Son, London."

Sir J. Y. Simpson ("Clinical Lectures on the Diseases of Women," Vol. iii, 1872), after explaining (p. 523) his objections to cephalotripsy, turns to craniotomy and a simple operation "which I have proposed to designate *Cranioclasm*" (p. 525). After using his perforator (p. 526, and see description of that instrument in this collection (No. 81)), he describes this cranioclast (p. 527). It "is of the usual length and weight of the guarded craniotomy forceps employed in British practice, being about 13 in. (33 cm.) long, $5\frac{1}{2}$ in. (14 cm.) from the tip to the middle of the button-joints; its outer blade at the broadest point 1 in. (2.3 cm.), and its inner blade, of course, somewhat narrower; and the exterior (*sic*) of the length of the fenestra of the outer blade about 3 in. (7.6 cm.). It is a kind of forceps with a movable button-joint, resembling a joint in Brünninghausen's Midwifery forceps" (see No. 29). In his first two cases of cranioclasm Simpson used the scissor-jointed craniotomy forceps of Dr. Murphy, figured in that obstetrician's "Lectures on Parturition," p. 234. Simpson modified it, as seen in this instrument. He writes, *loc. cit.*, p. 528: "Of the blades, the inner—or smaller one—is solid and convex, and serrated on the side by which it fits into the concavity of the other larger fenestrated blade. They have both a slight curve, to enable them to be

adapted to the curved form of the bones of the cranial vault. The concave surface of the outer, double, or fenestrated blade, and the convex surface of the inner, single, or solid blade, are serrated with relative transverse ridges and grooves, so as to make the hold of the instrument as perfect as possible without fear of lacerating the included tissues." The solid blade is introduced first, through the hole in the cranium made by the perforator, and then the large fenestrated blade is passed over the occiput outside the scalp and the two are made to lock. By twisting, the bone is broken across and this may be all the crushing that is needed. Simpson declared that by this forceps the bones can be readily broken and also very firmly held.

Simpson's description and his drawing (*loc. cit.*, Fig. 88, p. 526), correspond to the characters of this instrument excepting that in this sample the finger-rests in the original do not exist, and the shank of the lower blade is slightly elbowed, after Barnes's pattern (see No. 100). The handles are lined with ebony bearing deep finger depressions, as in Simpson's obstetric forceps (Nos. 21, 28).

The blades, as described by Simpson in the above quotation, are typical and distinctive of the Simpson-Murphy-Barnes craniotomy forceps). See Sir A. R. Simpson: "Contributions to Obstetrics and Gynæcology," 1880, p. 327, for an account of the circumstances which led to the invention of cranioclasm.

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99A. **Simpson's Craniotomy Forceps or Cranioclast (II).**

Weight 1 lb. 1 oz. (482.3 grms.); length 13½ in. (34.3 cm.); length of blades to lock 6 in. (15.2 cm.). "H. Windler, Berlin."

Nickel-plated steel. A highly-finished instrument made in Germany, the handles are lined with ivory bearing deep finger depressions (see No. 26). It, like No. 99, does not bear the finger-rests present in Simpson's original pattern, but, as in the original, the shank of the lower blade is not elbowed after Barnes' principle. *Royal Society of Medicine.*

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100. **Barnes's Craniotomy Forceps (I).**

Weight 1 lb. 4 oz. (567 grms.); length 14½ in. (36.8 cm.); length of blades to lock 6½ in. (16.5 cm.). "Maw and Son."

"Dr. Barnes exhibited and described a new Craniotomy forceps. It combined the advantage of the instruments of Professors Simpson and Murphy, and by a further contrivance added by Dr. Barnes was rendered much more effective than any other instrument with which he was acquainted. The elbow on the inner blade, allowing free room for any fold of scalp at the point of perforation, permitted

duck-bill-toothed portions of the blades to be pushed high up to secure a firm hold of the cranium, without the danger of straining the lock. By this means the blades were always kept in perfect parallelism, ensuring a widely diffused grasp of the cranium, and avoiding the risk of tearing away. Having properly seized the cranium, it became a point of great importance to secure the hold in a manner to save the operator the fatigue and muscular strain of passing the handles together, whilst at the same time considerable extracting power is required. For this purpose he had adapted a powerful screw which united the extremities of the handles, setting the blades fast at any interval required. Another advantage provided for was the fitting the blades with a modification of the French forceps lock (it is really a Brünninghausen or German lock —see Nos. 29 and 99; the French lock is seen in No. 50 and No. 145), so that the instrument could either be used as one piece, or the two blades could be applied separately. The entire length of the instrument was fifteen inches. Dr. Barnes said that he had used the instrument several times, and that its grasp and action were so perfect that he had never been obliged to take a fresh hold." (*Trans. Obstet. Soc.*, vol. v, 1863, p. 277, with figure.) This forceps is a little shorter than the standard instrument above described. The handles are lined with ebony, bearing deep finger depressions.

For Robert Barnes's latest opinion on his craniotomy forceps, see R. and Fancourt Barnes's "System of Obstetric Medicine," vol. II, p. 518, and fig. 116, p. 686. The authors maintained that Barnes' and Hall Davis's craniotomy forceps worked well. Braun's was too much curved in the blades to take an equally diffused wide grasp. Barnes states that Charpentier was wrong in speaking of Barnes's instrument as a modification of Braun's. Barnes modified it from Simpson's (*vide supra*). It was made by him with successive improvements in 1862, 1863 and 1864. The authors conclude: "It might be further improved by giving it a slight perineal curve." *Royal Society of Medicine.*

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101. **Hall Davis's Craniotomy Forceps**

Weight 1 lb. 3 oz. (539 grms.); length 14 in. (35.6 cm.); blades $5\frac{1}{2}$ in. (14 cm.) to lock. "Maw and Son, London."

"Dr. Hall Davis's craniotomy in general features resembles Dr. Barnes's. The male blade has a range of teeth forming a back serrated ridge in the shape of a very elongated horse-shoe. The female blade presents a corresponding groove; the blades are further fenestrated. The lock is Brünninghausen's. Instead of Dr. Barnes's screw to fix the handles, a clip like a rack is attached to the extremities. They are figured in the subjoined sketch as

made by Coxeter." Catal. Obstet. Soc., 1866, pp. 42, 43, fig. 29. (No such "clip like a rack" is figured in the sketch, fig. 39, nor does it exist in this sample which bears the name of another dealer.)

The lower 4 in. (10.16 cm.) of the handles are lined with ebony and there is a big palm-rest, and the handles bear shanks ($5\frac{1}{2}$ in. (14 cm.) long. The blades are slightly curved, the horse-shoe curve and corresponding groove in the opposite blade measure $1\frac{1}{2}$ in. (3.8 cm.); the fenestræ, which are bordered by the horse-shoe range of teeth and corresponding groove, are over 2 inches long (5.08 cm.), being prolonged downwards below the teeth.

Royal Society of Medicine.

101A. **Radford's Craniotomy Forceps (External Blade).**

This sample did not belong to the Collection formerly the property of the Obstetrical Society. It was presented by Dr. Radford to the Museum of the Royal College of Surgeons, August 29th, 1871. It corresponds to the instrument figured in the Cat. Obstet. Soc., 1866, pp. 41-2, and fig. 38. "*Radford's Craniotomy Forceps*. This instrument consists of two blades, which are introduced separately, and articulate by the English forceps-lock. The total length is $11\frac{1}{2}$ in. (39.3 cm.). The length of the handles to the joint is 8 in. (22.32 cm.). The blades are slightly curved. The external or female blade is ribbed on the concave surface, and has three perforations in it to receive three teeth projecting on the convex surface of the internal or male blade, which has ribs similar to the external blade." This external blade weighs $11\frac{1}{2}$ oz. (326 grms.). *Dr. Radford,* 1871.

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102. **Windler's Craniotomy Forceps.**

Weight $8\frac{1}{4}$ oz. (234 grms.); length 1 ft. (30.5 cm.); length of blades to lock $6\frac{1}{2}$ in. (16.5 cm.). "Windler, Berlin."

A very light instrument made of steel, nickel-plated. Iimbs cross like in common obstetric forceps, English lock but with clip on handle of the left blade only. Handles coated with smooth ivory, no palm-rest or shoulder. The shanks are flattened antero-posteriorly, and the right is superimposed on the left. The blades, though not distinctly marked off from the shanks, are not superimposed, but are flattened laterally; they are narrow, and internally concave, and deeply notched along their edges and at their extremities.

See Notes to Nos. 113, 104.

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103. Rizzoli's Craniotomy Forceps.

Weight 6 oz. (170 grms.); length 11 in. (28 cm.); length of blades to lock, 4 in. (10.16 cm.). "Fratelli Lollini."

A small, light instrument, with the blades made after Simpson's type, the left or lower blade fitting into a fenestra in the upper, and much narrower than in Simpson's. The blades are curved on the flat, the lower is flattened antero-posteriorly and smooth, its inner edge, $\frac{1}{8}$ in. (0.3 cm.) broad, is finely serrated along each border. The free edge of the fenestra in the concave side bears wide blunt grooves. Scissors-hinge, shanks long and straight, with ordinary scissors-rings at their free ends. This instrument is worked by a removable screw bar fixed by a Charrière-Péan joint to the end of the handle of the left blade, passing through a fork in the opposite blade; a winged travelling screw closing the blade. This mechanism is the same as is applied to the handles in Blot's cephalotribe, No. 114.

These very light craniotomy forceps are more suited for picking off pieces of the cranial bones after perforation than for extraction of the head; No. 104 represents a further development of this type.

This instrument was included in the box made for Rizzoli's cephalotribe with reversible blades (No. 118).

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104. Hamilton's Cranial Bone Forceps.

Weight $11\frac{1}{2}$ oz. (326 grms.); length $11\frac{1}{2}$ in. (29.2 cm.); length of blades to screw $3\frac{1}{4}$ in. (8.2 cm.).

"Matthews, Portugal Street, London."

According to the Cat. Obstet. Soc., 1866, p. 141, where this instrument is called "Cranial Bone Forceps, Hamilton's," but not figured, "this resembles, and is sometimes called in the shops, a craniotomy forceps. It is, however, much smaller in the blades. It is constructed on the scissor principle as to lock and handles. The blades are slightly curved and have transverse or duck-bill edges. It is designed to seize and pick off pieces of the cranial bones after perforation. It is too feeble to screw for extraction of the head. They (*sic*) were exhibited by Dr. Fleetwood Churchill, Honorary Fellow of the Society." Hence the instrument is, incorrectly, ascribed to Churchill by Witkowski ("Arsenal," fig. 904, p. 141); Boer's forceps closely resembled it. Churchill does not figure or mention it in his "Theory and Practice of Midwifery," 4th Ed., 1860, p. 360, where he states that he objected to craniotomy forceps and preferred the crotchet.

In addition to the above description, it must be added that the blades are solid and bear simple transverse grooves on their inner

and opposed surfaces. The upper projects as a blunt snout beyond the extremity of the lower, overhanging it completely. Screw block-lock. Shanks of the handles quite straight, handles 3 in. (7.6 cm.) long, coated with chequered ebony, end in a palm-rest, like in an obstetric forceps. See Note to No. 103.

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105. **David Davis's Osteotomist Punch.**

Weight 1 lb. 1¼ oz. (489 grms.); length 1 ft. (30.4 cm.); tip to lock 3 in. (7.6 cm.); punch oval, 1 in. (2.5 cm.) long diameter, 2 in. (5.08 cm.) short diameter, fitting into an oval ring, a little wider, in lower blade. "Evans, London."

A powerful cutting instrument designed by Davis for delivery in cases of extreme distortion of the pelvis. "It is indeed, a power by which any portion of the fœtal skeleton, presenting at the brim of a contracted pelvis, may be broken down into small fragments of about half an inch in diameter, with the most perfect impunity to the structure (*sic*) of the parts of the mother concerned in the operation." Davis believed that the cranial bones might be so freely cut away as to allow of the passage of the head through an inlet contracted to between an inch and an inch and a half antero-posteriorly so that a skilful operator need hardly ever have recourse to "that last extremity of our art, and the forlorn hope of the unhappy) patient, the Cæsarean Operation." ("Elements of Operative Midwifery," pp. 304–7, and Pl. xviii.)

Figured Cat. Obstet. Soc., 1866, p. 141, fig. 138.

Usually known as the "David Davis's Osteotomist," but this instrument was presented to the Obstetrical Society as his "Osteotomist Punch." Nélaton and Sir Francis Champneys devised similar instruments for the morecellement of uterine polypi, etc.

Royal Society of Medicine.

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106. **David Davis's Osteotomist.**

Weight 1 lb. 5 oz. (596 grms.); length 13 in. (33 cm.); length of pliers to lock 3 in. (7.6 cm.).

"Ferguson, 21, Giltspur Street, London."

This instrument is forged in solid steel. The handles, long and slightly bowed outwards, have a spring between them. One limb terminates above in a box-shaped end with a rounded point, and a 6 inch (15.2 cm.) rounded channel below the blade, through which passes the other shank or limb which ends as a block, forming an inner lid fitting into the box end, thus making a cutting instrument.

Presented by Dr. Hall Davis to the Obstetrical Society of

London as his father's osteotomist. It is older than the "punch," but is not mentioned in Dr. David Davis's two standard works.

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107. **David Davis's Osteotomist Pliers.**

Weight 1 lb. 4 oz. (567 grms.); length 17½ in. (44.45 cm.); pliers from tip to lock 3½ in. (8.87 cm.).

"Botschan, London"—"Dr. Davis's."

A powerful instrument with handles strong, flat and wide at their free ends, without a palm-rest. Fixed scissors-joint. Upper or female blade with a fenestra 2¼ in. (5.7 cm.) long, curved downwards, projecting at its free end ½ in. (12.7 cm.) over the lower and male blade which bears upon its inner surface an oblong projecting block or punch 2 in. (5.08 cm.) long, and grooved along its upper surface so as to make two strong cutting edges. The whole block is convex longitudinally and fits into the fenestra in the upper blade.

Davis designed his osteotomy pliers for use when the operator had to cut away fœtal bone in a very confined space (see "David Davis's Osteotomist Punch," No. 105, and see his "Operative Midwifery," pp. 311—319. "Precautions necessary to be observed in the use of the osteotomist," and Pl. xix).

This instrument is also figured, with a short description, in the Cat. Obstet. Soc., 1866, p. 140, and Fig. 137.

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108. **Assalini's Cephalotribe.**

Weight 1 lb. 9½ oz. (723 grms.); length 16 in. (40.6 cm.).

"The earliest instrument designed for crushing the bones of the fœtal skull appears to have been the 'compressor forceps' (*nuovo forcipe compressore*) of Assalini. . . . . It was designed by him to overcome the cases of the second order of difficulty, those, namely, in which the conjugate diameter was much under three inches (7.6 cm.), or in which the head was left behind after the detachment of the body. He used it to crush the base of the skull and the face, and relates cases of successful use. Like his forceps modelled after Palfyn's idea of bringing two levers into opposition, the blades do not cross." They are powerful bars slightly curved to grasp the head, the inner blade being 1 in. (2.5 cm.) shorter than its fellow. The outer surfaces are convex, the inner quite flat with slight return edge at the free end of the blade to prevent slipping. The blades, as in the same obstetrician's obstetric forceps, do not cross, but the free ends of the handles are not incurved and united by a mortice lock as in

Assalini's forceps. The handles in this cephalotribe terminate in two revolving stems with a pin junction, an arrangement devised to steady the action of the blades. The crushing force is effected by the action of a screw at the point where the handles meet the blades. This screw is fixed to the longer blade and works through a slot in the shorter blade by means of a travelling screw.

Figured in Cat. Obstet. Soc., 1866, p. 18, and Fig. 13, taken from "Su l'uso de nuovi stromenti di Ostetricia del Cav. Prof. Assalini," by Gervasoni, 1811, p. 5, and Pl. iii. Assalini in his own work, "Nuovi stromenti di Ostetricia," also published in 1811, represents his cephalotribe, Pl. ii, Fig. 5.

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109. **Lazarewitch's Cephalotribe.**

Weight 2 lbs. (908 grms.).

The measurements are given in the description of this instrument below. "A. Grunblatt, Charkow."

The following note on this instrument is taken from the Cat. Obst. Soc., 1866, p. 18, and Fig. 15 :—

"The instrument most nearly resembling the original compressor-forceps of Assalini is the CEPHALOTRIBE of Professor Lazarewitch of Charkow, Honorary Fellow of our Society. This instrument has a full pelvic curve in the blades. These are scooped out in the inner sides and are armed with three long pyramidal projections springing from the hollow of the blades, and ending in points which look towards the handles. These are calculated to help in breaking down the bones, and also in securing a hold for traction. When closed, the blades are $\frac{7}{8}$ in. (2.2 cm.) apart in the middle; the extreme ends curve inwards so as to touch. The distance then marks the limit to which compression can be carried. The blades are 9.5 in. (24.1 cm.) long. The shanks then (*sic*) run parallel to the handles, which turn off at right angles; the shanks are 6.5 in. (16.5 cm.) long; they are united near the handles by a stout flat bar projecting from one shank which slips through a slit in the other. This arrangement is known as Assalini's lock. This point of union forms the fulcrum or centre upon which the two arms work. The compressive force is applied by a screw which is carried through the shanks near their junction with the blades. [There is, in this sample, an extra screw-hole higher on the blade to increase pressure, if needed.] The blades are long enough to carry the screw a sufficient distance from the vulva to obviate inconvenience in working. The blades are introduced separately, and being little more than an inch wide, are easy of application. This instrument was one of the lightest [cephalotribes] exhibited,

and of the most simple construction; it weighs only two lbs. (908 grms.). The instrument, exhibited by Professor Lazarewitch, has been presented to the Society by Dr. Barnes, President."

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110. **Baudelocque's Cephalotribe.**

(Preserved in a separate case.)

Weight 4 lb. 11 oz. (2.128 kilos); length $20\frac{5}{8}$ in. (52.38 cm.); length of each blade, measured from the lock, $9\frac{5}{8}$ in. (24.4 cm.); greatest breadth of blades (close to extremity) $1\frac{1}{2}$ in. (3.8 cm.); greatest thickness $\frac{1}{4}$ in. (0.6 cm.). "Sirhenry à Paris."

Each limb is forged in one piece. The lock, which is of the French type, is eccentric, to increase the compressive power. The compressive force is obtained by a travelling screw, which runs in a female screw in the left handle and through an oblong slit in the right handle, which enables the eccentric joint to compress equally at any given moment. The screw is worked by a winch-shaped handle, or *manivelle,* made removable for portability. The blades have a considerable pelvic curve, while the cephalic curve is slight, the closed blades being only $1\frac{1}{4}$ in. (3.17 cm.) apart at the greatest distance; the free ends of the blades are smoothly rounded and touch when the blades are closed. The blaes widen gradually from the lock, an their inner surface is smooth and deeply concave. They are bevelled at the edges, as in most samples of this instrument. (See Cat. Obstet. Soc., 1866, p. 20, and fig. 15.)

This is the original instrument used from 1829 by the inventor, Louis Auguste, son of Jean Baptiste Baudelocque, and nephew of Jean Louis Baudelocque, who invented the vectis (No. 59 in this collection) in 1833. The Académie des Sciences awarded Louis Auguste Baudelocque 2,000 francs in 1833 for this invention. L. A. Baudelocque believed, wrongly, that it would make perforation superfluous.

Madame Petitjean, of Paris, who inherited this cephalotribe from Baudelocque, wished it to be preserved by the Obstetrical Society of London. Sir Charles Locock, carrying out the wish of the celebrated French midwife, presented it to the Society in 1865. (See *Trans. Obstet. Soc.,* vol. vii, 1865, p. 208.)

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111. **Depaul's Cephalotribe.**

Weight 3 lb. 14 oz. (1.75 kilo.); length 20 in. (50.8 cm.); length of blades 10 in. (25.4 cm.); greatest breadth, close to extremity 1 in. (2.54 cm.). "Charrière à Paris."

A massive instrument furnished with Charrière's detaching

joints, a Charrière-Péan's lock at each blade allowing of its disarticulation. (See Pajot's Obstetric Forceps, No. 50.) The handles are flattened, chequered and superimposed, not opposed, resting in apposition as in Rizzoli's obstetric forceps, excepting for three inches (7.6 cm.) adjacent to the rack and pinion where a wide space exists. The lock is of the modern French type, with a very big thumb-piece, $1\frac{5}{8}$ in. (4.12 cm.) long, $\frac{7}{8}$ in. (2.2 cm.) high, and very thick, made eccentric to increase leverage. The blades have a strong pelvic curve and their inner surfaces are file-cut according to Charrière's pattern. Depaul's cephalotribe, as made by Mathieu, bore small teeth near the ends. The aim of Charrière and Mathieu was to improve the grasp on the fœtal head. The ends of the blades are curved inwards to form crotchets which, meeting when the blades are fully closed, leave a maximum space of $\frac{5}{8}$ in. (1.5 cm.) between the blades. This instrument is worked by a grooved chain rack and pinion fixed to the handle of the right blade, which was wound up by a key (missing) on a drum on the right handle, which also bears a spring lock to allow of instant release of the chain.

The mechanism of Depaul's instrument was frequently varied (see Cat. Obstet. Soc., 1866, p. 21, where two modifications are described). The screw arrangement is identical with that of Dubois' cephalotribe in Kilian's "Armamentarium Lucinæ," Pl. xliv, and Witkowski ("Arsenal Obstétrical," fig. 798), reproduces the drawing as "Dubois–Depaul." In Charpentier's "Traité des Accouchements," vol. ii, fig. 871, p. 952, Depaul's cephalotribe is represented without crotchets at the end of the blades. The gap between the handles below, and the jointed blades seem peculiar to Charrière's modification.

According to an M. S. list sent by Charrière to the Conversazione Exhibition in 1866 this instrument is a "*sephalotribe à entablure de M. le Professeur Pajot et à brisure de Charrière.*" The Cat. Obstet. Soc., 1866, p. 21, names a Depaul's cephaliotribe exhibited by Sir James Simpson and another by Charrière, but the former was made by Mathieu and consequently the inner surface of the blades bore small teeth near their ends, and Charrière's instrument as figured (*loc. cit.*, fig. 16, p. 21) is not identical with this sample, as the handles are represented as straight and the blades have no disarticulating arrangement, though Charrière in 1866 had already adapted it to his Obstetric forceps (see No. 50).

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112. **Braun's Cephalotribe.**

Weight 2 lbs. 1 oz. (936 grms.); length 16 in. (40.6 cm.); length of blades with shanks 9 in. (22.8 cm.); of the crushing part of

blades $5\frac{1}{2}$ in. (14 cm.); greatest breadth of ditto (at free end) $1\frac{1}{4}$ in. (3.17 cm.). "Leiter in Wien."

Solid steel handles faced with ebony, furnished with short finger rests near the lock. One handle is divided into two by a jointed portion provided with a hook which fixes on to a travelling block attached to a gun-metal screw. On the inner side of the unjointed handle is fixed a "bed" in which the screw works with the block. The screw is turned by a steel cross-bar (not preserved) passed into the hole in the brass knob at the end of the unjointed handle. The blades are brought into apposition and the crushing power is high. German (Brünninghausen) lock, blades deeply grooved on the inner surface, so that a prominent spine runs longitudinally from tip to base. Ends curved inwards with a short return curve. The pelvic curve, as usual with cephalotribes, is not strongly marked.

Described and figured in the Catal. Obstet. Soc., 1866, p. 22, and Fig. 18, but this sample did not belong to the Society's museum. See also Ritchie, "On the Operation of Cephalotripsy as performed at Vienna by Professor Braun," *Trans. Obstet. Soc.*, Vol. vi, 1864, p. 75, and Pl. ii. The instrument here exhibited was originally the property of Dr. Greenhalgh or one of his predecessors when Physician-Accoucheur to St. Bartholomew's Hospital.

Sir Francis Champneys, Bt., 1913.

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113. **Martin's Cephalotribe.**

Weight 2 lb. $9\frac{1}{2}$ oz. (1.17 kilog.). "Schmidt, Berlin."

The measurements are given in the following quotation:—

"Dr. August E. Martin presented the cephalotribe invented by his father, Professor (Eduard) Martin of Berlin.

"My father, an honorary fellow of your illustrious Society, desires me to present to you this specimen of his cephalotribe. This instrument was exhibited at your conversazione in 1866, but as it is neither mentioned in the catalogue nor contained in your collection, although it has been proved during a long experience at Berlin to be a valuable instrument, my father begs you to accept it as an addition to your collection.

"The cephalotribe is composed of two blades joined by an English lock [with clips on both blades, as in British-made forceps, which is not the rule in foreign forceps with the English lock]. The whole instrument is 43 cm. ($16\frac{3}{4}$ in.) long, the handles measuring 19 cm. ($7\frac{1}{2}$ in.), the blades 24 cm. ($9\frac{1}{2}$ in.). The handles are covered with wood and have transverse grooves for facilitating traction. [The grooves are "finger-rests": see notes on D. W. Busch's No. 14, and Sir J. Y. Simpson's (No. 26) Obstetric Forceps.] The left carries the screw which approximates the

blades. [Precisely the same as in Nos. 114 and 119.] These blades have double curves; that for the pelvis measuring 9 centimetres (3½ in.), that for the head 3.8 cm. (1½ in.). The broadest portion of the blades measures 3.6 cm. (3.6 in.). Both are fenestrated, the fenestræ measuring 2 cm. (¾ in.). The upper ends touch over an extent of 2.4 cm. (under one in.). The blades are carefully rounded and sufficiently strong, though not too heavy. We always perforate before applying the instrument, and it has neither failed in compression nor in traction when its use has been indicated." *Trans. Obstet. Soc.*, Vol. xiv, 1872, p. 65, with drawing.

(Edward Martin's kephalotryptor, figured in his Hand Atlas, and described in the Cat. Obstet. Soc., 1866, p. 22, was a larger instrument, nearly 24 in. (70 cm.) in length.

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114. **Blot's Cephalotribe.**

Weight 3 lb. 8 oz. (1.5 kilo.); length 20½ in. (51.27 cm.); length of blades 9½ in. (24.1 cm.); greatest breadth, a little below extremities, 1 in. (2.54 cm.). "Young, Edin."

A very massive instrument, with each limb forged out of one piece of steel. As in the sample of Depaul's cephalotribe made by Charrière in this collection, the handles are flattened, file-cut, and superimposed, not opposed, resting in apposition, excepting for nearly 3 in. (7.6 cm.) above the screw, where a wide space exists. In this instrument the antero-posterior flattening is extreme and each handle is 1⅝ in. (4.12 cm.) wide near the lock, which is of the Brünninghausen or German type, the pivot (eccentric in order to increase the leverage) having a flattened head and not a thumb-piece. The blades have a moderate pelvic curve, they do not end in crotchets, are well hollowed and file-cut on the inner side, and when their points meet they enclose a space of which the greatest breadth is half an inch.

The cephalotribe is worked, as in 113 and 119, by a removable screw-bar fixed by a Charrière-Péan joint to the end of the handle of the left blade, passing through a fork in the opposite blade. The blades are closed by a winged travelling screw 5 inches (12.7 cm.) across the wings. *Royal Society of Medicine.*

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115. **Hennig's Kephalotryptor.**

Weight 4 lb. 13 oz. (2.185 kilos.); length 21 in. (53.3 cm.); length of blades 10½ in. (26.6 cm.); greatest breadth 1½ in (3.8 cm.).

(Bears a circular trade-mark almost effaced.)

"The Kephalotryptor of Professor Henning, of Leipsig, date 1865, was exhibited by the inventor" at the Conversazione of the

Obstetrical Society, in 1866. This very massive instrument, made of solid steel throughout, is designated the Kephalotryptor *à crochets*. "It is armed with hooks or crotchets in order to grasp the head more firmly and to facilitate extraction after crushing. The crotchets, if not needed, may be guarded and concealed." The hooks at the ends of the crotchets also serve as finger-rests in extraction. In order to bring the crotchets into use, the spring bolting the handles is released and the hook or finger-rest drawn down, bringing the point of the crotchet into position. By a reverse manœuvre, the head can be set free from the hooks. Professor Hennig's instrument works with a screw running through a wide curved slot in the end of the opposite handle, and is turned by a winch. The lock is English, but with a clip on the handle of the left blade only. The handles are coated on both sides with chequered ebony. See "Catal. Obstet. Soc., 1866," p. 24 and fig. 21, where the description, however, is incomplete.

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116. **Kidd's Cephalotribe (Straight).**

Weight 2 lb. $8\frac{3}{4}$ oz. (1.15 kilos); length $15\frac{1}{2}$ in. (39.3 cm.), see below; length of blades $10\frac{1}{2}$ in. (26.6 cm.) near free end.

"Fannin, Dublin."

Each limb is made of a solid piece of metal crossing at the lock, which is of the English type, but with lock reversed (see below). Handles short, flattened laterally, chequered outside. Blades almost straight, but sharply incurved at their free extremities. The shanks measure $3\frac{1}{2}$ in. (8.8 cm.) in length, and are quadrilateral and broadest in their anterior and posterior aspects; they run almost parallel to each other at a distance of about $\frac{1}{2}$ in. (1.2 cm.). The blades run $7\frac{1}{2}$ in. (19 cm.) beyond the shanks; they are flattened laterally, and shouldered on reverse sides at their junction with the shanks. They widen very gradually towards their incurved free ends. They are concave internally, and have a double groove, the high ridge between the grooves forming a spine which increases the crushing power. The cephalotribe is worked by a removable male screw which passes through two slots, one close to the extremity of each handle, and closed in, not opening on to the free border of the handle, and a fly-nut bearing a very wide thumb-piece, with wings each over 2 in. (5 cm.) in width. The end of the screw is widened and made square outside the slot, whilst the fly-nut presses against the outside of the other slot.

Originally designed and described and figured by Kidd in an article "On Cephalotripsy," *Dublin Quarterly Journ. Med. Science,* Vol. xi, 1867, p. 333, also "Observations on the Construc-

tion of the Cephalotribe," *Brit. Med. Journ.*, Vol. ii, 1867, p. 335. His measurements are given as: length 14 in. (35.6 cm.); length of blades 9 in. (22.8 cm.); and the weight is 2 lb. 4 oz," but Kidd notes that he had advised his instrument maker "to add fully an inch to the length of the shanks so as to throw the lock outside the vulva." Kidd presented this lengthened sample with four casts of fœtal heads which it had compressed (116A), *per* Dr. Graily Hewitt, to the Obstetrical Society in 1870. (*Trans. Obstet. Soc.*, Vol. xii, p. 1.)

Dr. G. H. Kidd constructed this instrument so that the lock is made the reverse way to that of Simpson's and all others, and is made so that the groove in the upper blade locks forwards instead of backwards when the instrument has been introduced. Radford had already held Kidd's views about the lock. Kidd strongly advocated the straight blade. He maintained that it permits of the head being rotated in a smaller space than when the blade is curved, it is easier to guide, it holds the head more securely, and during extraction the handle of the short straight instrument indicates the direction in which the traction should be applied. (See *British Medical Journ., loc. cit.*, p. 336.)

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116A. **Cast of Fœtal Head Compressed by Kidd's Cephalotribe.**

It bore the label marked, "Head caught in the fourth position; the doubling on the neck caused by carrying it home to have the cast taken." This note corresponds to another by Kidd, *loc cit.*, p. 2: "This was a case in private practice, and in carrying it home to get the cast taken, the neck got the bend shown in the cast."

"Presented (to the Obstetrical Society of London) by G. H. Kidd, M.D.," with the cephalotribe, No. 116, in 1870 with a note stating that all our casts were taken before the instrument was removed from the head after operation. "The heads have been caught in different positions and they all seem to me to have special value as shewing that, while the bulk of the head is greatly reduced by the flattening of the cranium, the base of the skull is turned edgeways between the blade of the cephalotribe and not broken or doubled-up. It is in this way put in the most favourable position for passing through a pelvis narrowed in the antero-posterior diameter. . . . . I think the casts show that the straight instrument catches the head more in the middle than a curved one can do, and that there is consequently less risk of its slipping from between the blades when the pressure is applied." (*Trans. Obst. Soc., Lond.*, vol. xii, 1870, p. 1.) The three remaining casts are missing.

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116B. **Braxton Hicks's Cephalotribe.**

Weight 2 lb. 13 oz. (1.27 kilo.); length 14¼ in. (36.2 cm.); of blades 8½ in. (21.5 cm.); not measured by the slight curve; greatest breadth of blades (near free end) 1 in. (2.5¼ cm.).

"Krohne and Seseman."

(The removable screw is marked "G. Wright and Co., 108, New Bond Street," and does not fit the slots in the blade accurately).

Each limb is made of a solid piece of metal crossing at the lock, which is of the English type, made so that the groove in the upper blade locks backwards when the instrument has been introduced (see No. 116). The blades make a wide curve, and are sharply in-curved at the free extremities; their shanks are about 3¼ in. (8.2 cm.) long, greatly flattened antero-posteriorly and superimposed near the lock, and they are slightly and symmetrically shouldered at their junction with the shanks. Their inner surface is concave, the longitudinal partition making a double groove being serrated. The handles are chequered outside. The cephalotribe is worked by a removable male screw (6 in. long) which passes through two slots, which open out at the free end of each handle. This screw bears a cross-bar 4½ in. (11.4 cm.) wide, concave upwards on one side of the screw and convex on the other, as in Braxton Hicks' wire rope ecraseur No. 208—in his original cephalotribe, there were in place of the cross-bar three knobbed spokes, as in M. Hicks' large ecraseur No. 211; its convex washer fits into the slot nearest the cross-bar, counter-sunk to hold it. The female screw is a round travelling nut with a concave rim milled at each border, it has a square end which fits into the opposite slot. The cross-bar can thus be turned, without any slipping of the screw.

Described with a woodcut, by Dr. Braxton Hicks, under the heading "Cephalotribe," *Trans. Obstet. Soc.*, vol. viii, 1866, pp. 275–7, he laid stress on the modification of the screw mechanism. "The screw power could be detached from the instrument in an instant and reapplied as quickly, while the direct action was preserved." In older types, like Sir James Simpson's, where "the female screw was made to transverse on the male by thumb-piece (see 116), when the blades began to approximate, the end of the male screw pressed into the palm of the hand so much that the screw had to be worked at the side, whereby much loss of power was sustained."

The proprietor of this sample could not be traced. He apparently endeavoured to modify the screw by substituting a cross-bar for the three spikes conspicuous in the oiriginal model, but it does not fit well into the slots. (*Purchased* 1917.)

117. **Rizzoli's Cephalotribe.**

Weight, including screw and winch, 3 lb. 10 oz. (1.64 kilos); length 21 in. (53.3 cm.); length of blades 9½ in. (24.1 cm.).

"Lollini."

The following abstract, supplied by Rizzoli himself when he presented the instrument to the Obstetrical Society, is taken from the Cat. Obst. Soc., 1866, p. 24. "The general construction is after the model of Baudelocque's (being of solid steel throughout), but it is much improved in lightness and neatness . . . . The lock is the French forceps (eccentric) lock, but differs from Baudelocque's in this, that the fulcrum is formed by a screw which serves to fix the blades when adjusted. The handles, being ten inches long, are flat bars brought one over the other when the blades are closed, thus forming very powerful levers. They are brought together by a screw worked by a winch, so far like Baudelocque's, but differing in this, that instead of a simple oblong slit in the right handle, Rizzoli's right handle is an open fork, so as to admit of the screw revolving on a joint which fixes it to the left handle. This arrangement offers a great convenience in packing the instrument, and also in adjusting the screw for work. The blades have a more moderate pelvic curve than Baudelocque's or than most other French cephalotribes, but in other respects resemble Baudelocque's. They are lighter and narrower. When closed the points touch, and the extreme width between the edges of the blades is barely 0.50 inch. The blades are, however, deeply concave; the concavities are smooth. The effect of the narrowing of the blades, and the deep concavity, is to make the edges prominent and sharp, so that these would easily break into the skull as the blades are closed. The weight is 3 lb. 9 oz. (*sic*), which is very considerably below that of its prototype, the original instrument of Baudelocque; at the same time it is a powerful weapon, quite if not more than sufficiently strong to crush the head of any fœtus, and the close approximation of the blades secures a complete reduction of the cranial dimensions." (It will be noted that the surfaces of the handles are fluted as in modern instruments.)

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118. **Rizzoli's Cephalotribe with Reversible Blades.**

Weight (including screw) 3 lb. (1.36 kilo.); length 20½ in. (51.27 cm.).

This instrument, made of solid nickel-plated steel throughout, is distinguished from the preceding mainly in the arrangement by which the right can be placed before the left blade or the left before the right, as in the same obstetrician's long forceps (No. 45).

The handles are therefore, as in the forceps, extremely flattened antero-posteriorly, with bevelled edges. Instead of a slot and thumb-lock the joint is of the German type, a fixed pin on the left blade fitting into a lateral mortise on the right blade. The pin has a broad head on both sides, to allow of the super-imposing of either blade at will. The screw is worked by a transverse handle $3\frac{1}{4}$ in. (8.2 cm.) broad, instead of a winch. The screw travels through an open fork in the right handle, nearly 1 in. (2.54 cm.) shorter than in Rizzoli's earlier cephalotribe. The left handle ends in a ring, in which revolves, as in No. 117, a solid cylindrical piece of steel $1\frac{1}{2}$ in. (3.8 cm.) in its long or antero-posterior diameter. In this sample, however, the cylinder bears a female screw on both sides of the ring in the handle, and the male screw is passed through one or the other according as the right or left blade be placed forwards. In this cephalotribe the blades are fenestrated; and it is ten ounces (283 grms.) lighter than Rizzoli's other cephalotribe. A complete account of this cephalotribe with illustrations explaining its mechanism is to be found in Rizzoli's "Clinique Chirurgicale, Mémoires de Chirurgie et d'Obstétrique," Andreini's translation, Paris, 1874.

This instrument was presented to the Obstetrical Society of London by Professor Rizzoli, in a case containing also a tire-tête forceps (No. 89), a cranioclast (No. 103), and a decapitating crotchet (No. 128), all displayed in this collection.

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119. **Cohen's Cephalotribe.**

Weight $3\frac{1}{2}$ lb. (1.50 kilo. grs.); length $20\frac{3}{4}$ in. (52.7 cm.); length of blades $10\frac{1}{2}$ in. (26.6 cm.); greatest breadth of blades $1\frac{1}{4}$ in. (3.17 cm.), next free ends. "Lutter, Berlin."

"Professor Cohen's cephalotribe presents this peculiarity, that in addition to its power as a crushing instrument, each blade is armed with a cutting blade, by means of which the head is, as it were, bisected. This, no doubt, greatly facilitates the after-crushing, and enables the instrument to be of a lighter description." (It is doubtful if the scissors could act as intended. From their position they would be very liable to snap).

Handles straight, coated with wood in front and behind; finger-rests, modern French lock. The blades are solid, pelvic curve not strongly marked, much wider near extremities than near lock. Extremities bear dentations which fit into those of the opposite side so as to prevent slipping and to ensure thorough crushing of the cranial bones in the event of the skull presenting beyond the blade. The cutting blades fit into grooves in the grasping blades (which

are very thick), and cross each other near their points when the grasping blades are closed, the latter coming to a breadth of within $1\frac{1}{4}$ in. (3.17 cm.) at the widest.

The instrument is worked, as in 113 and 114, by a removable screw fitted on to a Charrière-Péan lock fixed to the free end of the handle of the left blade and running through a fork at the end of the opposite blade. The blades are closed by a winged travelling screw (as in Blot's instrument), having a span of $4\frac{3}{4}$ in. (12.1 cm.). See Cat. Obstet. Soc., 1866, fig. 20 and p. 23, quoted above.

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120. **Lollini's Cephalotribe-Perforator**

Weight of forceps 2 lbs. 1 oz. (936 grms.); length $16\frac{5}{8}$ in. (42.1 cm.); length of blades to lock $9\frac{1}{2}$ in. (24.1 cm.); breadth of blades $1\frac{1}{4}$ in. (3.17 cm.) near tip, space between tips when closed, *nil;* length of fenestræ $5\frac{1}{4}$ in. (13.3 cm.); breadth of do. $\frac{3}{4}$ in. (2 cm.).

Weight of perforating apparatus (120A) $13\frac{1}{2}$ oz. (383 grms.); length $19\frac{1}{2}$ in. (49.5 cm.); width of horn cross-piece $4\frac{1}{2}$ in. (11.4 cm.). See Dugès' "Terebellum or Trephine Perforator," Rizzoli's Modification (No. 85).

Weight of screw frame $6\frac{1}{2}$ oz. (184 grms.); length $4\frac{3}{4}$ in. (12.1 cm.); length of extra screw frame 5 in. (12.7 cm.); length of cross-handle 3 in. (7.6 cm.).

"Fli Lollini, Bologna."

The forceps, made of solid, nickel-plated steel, is curved, long, with each blade forged in one piece, after the Levret type and with marked pelvic curve. The blades are fenestrated and deeply concave on their inner sides, to allow of the passage of the trephine perforator. The handles are flattened laterally and roughened outside; that of the left blade ends in a blunt hook, whilst the handle of the right turns out at a right angle. An inch above each handle lies a saddle-shaped polished prominence, widest transversely, for support of the operator's finger and thumb, and to fit the extra screw frame (120A) when required. The lock is of the English type, with a clip on the handle of the left blade only. This clip bears a revolving mount $\frac{3}{4}$ in. (2 cm.) long, $\frac{1}{2}$ in. (1.27 cm.) high, and $\frac{1}{2}$ in. (1.27 cm.) broad, attached by a swivel to the upper border of the clip, and this mount unfastens on a hinge, like the lid of a box. A curved sliding metal tube passes through the mount; it bears on its upper or front surface a ten centimetre scale, mounted in a pyramidal form to prevent rocking. Along the canal of the sliding tube runs a free rod to the upper end of which is affixed a Dugès' trephine perforator of a pyramidal form, with clearing grooves running down its sides for the débris of the fœtal

bones (see No. 85). The lower end of the rod bears a cross-handle made of horn, by which the perforator can be revolved.

In order to increase, when necessary, the crushing power, a screw frame (120A) is supplied to fit on to the handles above their termination; it is worked by means of a cross-handle.

Figured in Witkowski's "Arsenal Obstétrical," Fig. 872, p. 137, as the "Céphalotribe perforateur de Lollini de Bologna, 1867." "The brothers Lollini of Florence constructed a forceps with a terebrator, which could be screwed first through the vault, and then the base, but it has hardly been used out of Italy." (Sir A. Russell Simpson, "History of Embryulcia," *Brit. Med. Journ.*, Vol. ii, 1884, p. 1178.)

Presented to the Obstetrical Society by Professor Rizzoli.

Royal Society of Medicine.

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121. **Ramsbotham's Decapitating Hook.**

Length 12¾ in. (32.4 cm.); shaft, exclusive of handle, 8½ in. (21.5 cm.). "Weedon."

A nickel-plated steel rod curved above into a semi-circle 2 in. (5 cm.) diameter. The concavity of the curve is a sharp cutting blade. Handle smooth ebony, with palm-rest.

Dr. Francis Ramsbotham, "Principles and Practice of Obstetric Medicine and Surgery," 5th edition, 1867, writes (p. 386) in reference to decapitation: "The best instrument for its performance is a hook with an internal cutting edge, formed by my father." A wood-cut is added. In 1836 David Davis figures it in the atlas in his "Principles and Practice of Obstetric Medicine," Pl. xlii, Fig. 3 (beside his Guarded Decapitator, No. 122, in this collection), as "a contrivance for effecting the same object suggested, or at least greatly modified by the author's valued friend and colleague, Dr. Ramsbotham." Jacquemier's *crotchet tranchant* (Witkowski's "Arsenal Obstétrical," Fig. 960, p. 149) is a similar instrument.

It was devised, like No. 122, for decapitation in transverse presentations, when turning is impracticable.

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122. **David Davis's Guarded Decapitator and Embryotomy Knife.**

Weight 11½ oz. (326 grms.); length 11 in. (28 cm.); free end to lock 5 in. (12.7 cm.). "Botschan, London—D. Davis's."

Dr. Davis writes of this instrument as "a little contrivance of my own suggestion. Among my pupils it has generally had the name of 'the guarded embryotomy knife.' It consists of two parts separable from each other at a common joint, of precisely the same construction as that of the English obstetric forceps. The more efficient counterpart is armed with a knife, diagonally attached to

its shank; which is to be passed up into the pelvis properly directed and guarded by the practitioner's left hand, and carried over the child's neck so as to obtain a perceptibly firm purchase of it. The other part is simply a guard to the knife; and is to be passed upon the opposite side of the child's neck, and with its counterpart to be duly adjusted at the lock. The handles should then be firmly tied together with a strong tape: after which the practitioner would have to pass two fingers of his right hand into the pelvis, in order to ascertai nfinally the precise circumstances of his case, and especially the important fact of the child's neck being within the perfect purchase of the hooked embryotomy knife. That fact being positively ascertained, the operator will only have to draw down the instrument with a cautious firmness, in the direction of the axis of the pelvis and the knife will be found to have cut its way through the child's neck very perfectly, and at the expense of a very considerable degree of force." "Elements of Operative Midwifery," pp. 327-8. (Full descriptions of Nos. 122 to 126 with figures will be found in both David Davis's works, "Operative Midwifery" and "Obstetric Medicine.")

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123. **David Davis's Guarded Decapitator and Embryotomy Knife. (II.)**

Weight 14 oz. (397 grms.); same length as No. 1, but the handles and blades are stouter, the knife is deeper, and the instrument is over 2 oz. (56 grms.) heavier. "Weiss, London."

This instrument was presented by Dr. J. Hall Davis as his father's "Guarded Embryotomy Knife" some years after his transference to the Museum of the Obstetrical Society of an entire series of David Davis's instruments packed in a box and now arranged in this collection. *Royal Society of Medicine.*

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124. **David Davis's Triple-pronged Body Crotchet.**

(For use after Decapitation.)

Weight (1 lb. $1\frac{3}{4}$ oz. (504 grms.); length 1 ft. (30.5 cm.); free end to lock 6 in. "Botschan: D. Davis's Crotchet."

Dr. Davis writes: "Its shanks are made very strong, in order to ensure for it a great degree of compressing force, as well as the power of transfixing the fœtal body with its crotchet prongs. The crotchet branch is to be passed up to its intended destination, under the careful protection of the left hand of the operator (which, of course, must be previously lodged within the pelvis for that purpose); and the fingers carried up some distance above the brim in order to adjust and fix the points of the prongs to the part of the child's body which is intended to be made the subject of their

purchase. When the crotchet branch is firmly fixed, then the guard should be passed on the other side of the pelvis, and applied to the opposite sde of the fœtal body. The locking should then be duly adjusted, and the handles of the instrument firmly bound together by a tape. The first efforts of extraction, I scarcely need observe, should be made in a line with the superior aperture of the pelvis, and in such a firm but cautious manner, as not to fail to bring the fœtal body through its narrow passage, and yet without permitting any part of the shanks of the instrument to impinge against the parieties of the pelvis." "Elements of Operative Midwifery," p. 302.

Palm-rest very broad, handles thick, lined with ebony, flattened antero-posteriorly, slight shoulder, English lock. A massive instrument, heavy for its size, the crotchet is very wide and blunt at its extremity, and bears three prongs, each about $\frac{3}{4}$ in. (1.95 cm.) long; bent sharply downwards. The guard has the shape of a shallow, elongated spoon and is longer than the crotchet, capping its blunt end when closed. *Royal Society of Medicine.*

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125. **David Davis's Triple-pronged Body Crotchet (II).**

A similar instrument, weight identical with I. Palm-rest much broader, but no shoulder to upper part of handle, as in No. 1.

"Weiss, London."

Once the property of Dr. Hall Davis, see No. 123.

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126. **David Davis's Lesser or Double-pronged Body Crotchet.**

(For use after Decapitation.)

Weight 13 oz. (369 grms.); length 11$\frac{1}{2}$ in. (29.2 cm.); length of blades to lock 6 in. (15.24 cm.). "Weiss, London."

(This instrument was not included in the box holding the David Davis collection.)

D. Davis describes this forceps "an instrument precisely of the same knd as the other (*i.e.*, the triple-pronged body crotchet), but of such dimensions as necessarily to occupy much less space than the other. In cases, therefore, of extreme confinement (*sic*) of pelvis, it might be expedient to make choice of this latter instrument." He contrived that the shanks "whatever be the dimensions of the purchase-part of the instrument, must be sufficiently strong to ensure them against all possible risk of bending; which would expose the purchase branch of it to the loss of strict correspondence with the guard-branch, and therefore to the loss of the protection which otherwise it could not fail to receive from it." (D. Davis, "Operative Midwifery," p. 303 and Pl. xv, figs. 1, 2 and 3.)

The crotchet bears two prongs instead of three and the shanks are longer and straighter. *Royal Society of Medicine.*

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127. **Braun's Decapitating Crotchet (Schlüsselhaken).**

Length 11 in. (28 cm.); the turned-down portion at the extremity is $1\frac{1}{2}$ in. (3.8 cm.) long and 1 in. (2.5 cm.) distant from this stem.

The stem of this instrument is stout and ends in a hook, slightly everted near its free end extremity, which bears a button-like projection over $\frac{1}{8}$ in. (0.3 cm.) diameter. The handle is a wooden cross-piece $4\frac{1}{4}$ in. (10.7 cm.) long. In the *Wiener med. Wochenschr.*, 1861, p. 415, Gustav Braun wrote on Carl Braun's "Schlüsselhaken," and contributed numerous papers on the subject in the same journal, 1862, 1864 and 1866. In the volume for 1866, p. 627, in an article "Zur Decapitation mit dem Schlüsselhaken," he explains its use in full. It was employed in transverse presentations. An arm was drawn down to bring the neck down after it. The operator passed his left thumb and one or two fingers around the neck, and then passed the crotchet along the palm of the hand and hooked it on to the neck. The handle was next drawn upon firmly, till the cracking of the vertebral ligaments could be heard, then the crotchet was rotated on its long axis, traction on the handle being kept up at the same time, until the spine and the soft tissues of the neck were torn through. The left hand and fingers were kept in position all the time. Thus decapitation was effected without damage to the patient or the operator. Figured in Witkowski's "Arsenal Obstétrical," fig. 970, p. 150. Budin denounced the use of this 'boot-hook'-like crotchet, as the dragging and twisting process endangered the inferior segment of the uterus already weakened by the prolonged labour (Tarnier et Budin, "Traité de l'Art des Accouchements," vol. iv, p. 578, 1901).

Presented to the Obstetrical Society of London by Professor Lazarewitch. *Royal Society of Medicine.*

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128. **Rizzoli's Decapitating Crotchet (?).**

Length 13 in. (33 cm.); shaft exclusive of handle $8\frac{1}{2}$ in. (21.5 cm.); the turned-down portion of the extremity is 1 in. (2.5 cm.) long, and its free end is $\frac{5}{8}$ in. (1.5 cm.) distant from the stem.

"Made by the Bros. Lollini, Bologna."

The handle, quadrilateral and made of chequered ebony, curls slightly downwards and backwards at its free end, as in many foreign obstetrical instruments. (See note to No. 51, Levy's Forceps.)

This instrument is a modification of Braun's Decapitating Crotchet or Schlüsselhaken.

Presented to the Obstetrical Society by Professor Rizzoli, of Bologna. It was packed in the case that contained Rizzoli's cephalotribe with reversible blades (118).

Royal Society of Medicine.

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129. **Oldham's Spine Hook.**

13 in. (33 cm.) long; shank 4 in. (10.16 cm.), hence shorter than Oldham's original instrument. The turned down portion at the extremity is $\frac{5}{8}$ in. (1.5 cm.) long, and $\frac{1}{4}$ in. (0.6 cm.) distant from the stem. "Matthews."

Fully described by Dr. Henry Oldham in an article "On the use of a Vertebral Hook in some Cases of Difficult Delivery," *Lancet,* Vol. 1, 1855, p. 447. "This vertebral hook is of simple construction; its length is 14 inches of which four inches are taken up by the handle, which is roughened on the surface, and sufficiently large to afford a good grasp. A straight steel stem, well fixed into the handle, and gradually tapering to the extremity, is bent at an acute angle, the free point being filed off at the end to facilitate its being fixed. The bent part forming the hook is half an inch long, and projects at such an angle that it easily traverses the upper part of the vertebral canal in a mature or even seven months' fœtus, and, if well made, it is quite strong enough to bear without yielding any degree of traction by the hand. When using it all that is necessary is to seek for the foramen magnum, and to push the hook within it. The cord breaks down before it, and when within the canal it only requires a slight rotatory movement to be made to find it fixed firmly on the arches." Oldham made use of this spine hook in lingering labour with pelvic deformity where the crotchet was insufficient; he also found it "of essential service, too, in cases where the trunk of the fœtus has been removed and the head left behind, whether it be designedly, after severing the one from the other by an arm presentation, or when in attempting to extract a fœtus by the feet in a deformed pelvis, the neck has given way in the efforts to bring the head through the brim."

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130. **Lazarewitch's Lobster-claw Embryotome.**

Weight 1 lb. 1 oz.; length 1 ft. (30.5 cm.); length of steel stem 6 in. (15.2 cm.); length of blades $1\frac{1}{2}$ in. (3.8 cm.); span of blades when completely open $3\frac{1}{4}$ in. (8.87 cm.). "Grünblatt, Charkof."

A heavy instrument. It consists of a steel stem 6 in. (15.2 cm.) long, having at its upper part a box-shaped head into which is attached, by a screw joint, two curved prism-shaped blades, their

concavities approximating. Their points are blunt. At their lower end the blades have projecting shafts attached to a central rod 10½ in. (26.6 cm.) long. This rod passes along the interior of the stem, and is finished off at its lower end by a coarse screw on which travels a double thumbpiece 3 in. (7.6 cm.) long.

To the end of the steel stem is affixed an oval, fluted ebony handle. The blades can be opened or closed at will by turning the thumbpiece.

This is the " Embryotome en patte de homard " in Witkowski's "Arsenal Obstétrical," Fig. 1006, p. 156.

This instrument was presented to the Obstetrical Society several years before No. 131, but it is really the better embryotome. The blades are attached by a screw joint to the stem, the joint having a spring action for further security. In the next embryotome the blades are attached by a screw joint to the central rod, and thus are highly mobile, but difficult to control.

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131. **Lazarewitch's Modified Lobster-claw Embryotome**

Weight 10½ oz. (26.6 grms.); length 11¾ in. (29.8 cm.); span of blades when completely open, 3 in. (7.6 cm.). Handle and each blade marked " 4." " Gerber, St. Petersburg."

A much lighter instrument than No. 130, made entirely of metal. The hollow metal stem terminates below in a flattened handle bearing two finger-rods, and ends above in a funnel-shaped opening into which the blades recede. A metal rod passes through the hollow stem, and the blades, two sharp forcep-like ends made for seizing and cutting, are jointed to the upper end of the stem. Their extremities are chisel-like, ½ in. (1.2 cm.) broad, meeting accurately when closed. The blades can be reflected laterally. A coarse screw is cut for two inches (5 cm.) into the lower end of the stem, on to which is fitted a cross-handle with female thread, kept in position by means of a nut. The blades are to be introduced closed, with the screw drawn tight. Then the cross-handle is turned from right to left to allow the blades to open out. When they have seized the part of the fœtus to be cut, the screw is once more drawn tight. The mechanism appears to be faulty, as each blade, short, heavy and separately jointed, would waggle about and could hardly be controlled by the operator. Thus, if this embryotome be compared with that placed before it (No. 130), it will be seen that stability has been sacrificed to mobility.

Presented to the Obstetrical Society of London by Professor Lazarewitch in 1893, together with No. 132, a spare embryotomy blade and a spare craniotomy blade, each with its own metal rod bearing a coarse screw at its lower end, preserved with this instru-

ment. It may be noted that this modified embryotome was made in Petrograd; the earlier model bearing the name of a maker in Charkoff, where Lazarewitch was Professor before he went to the Russian capital. The blunt hooks show the same distinction.

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132. Lazarewitch's Modified Lobster-claw Embryotome: Extra Blades.

Blades 2. Same as in Lazarewitch's older, heavy embryotome, No. 130, but not so thick, and the points and prominent inner edges are sharp, and the blades can be deflected laterally. Blades marked "4," same number as in No. 131.

Blades 3. Resemble those of a craniotomy forceps on a very small scale. One blade, $2\frac{1}{2}$ in. (6.35 cm.) long, is continuous with the metal stem and screw, convex, half an inch (1.27 cm.) wide, blunt-ended and furnished with three rows of low, rather sharp teeth pointing downwards. The other blade is united to its fellow by a hinge-joint, it is 2 in. (5 cm.) long, toothed and blunt-nozzled like its fellow, convex externally near the hinge and concave near the free end.

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133. Rizzoli's Embryotome or Fetotomo (I).

Length $10\frac{1}{4}$ in. (26 cm.); length of blade $4\frac{3}{4}$ in. (12 cm.); breadth $\frac{1}{4}$ in. (1.2 cm.).

This instrument is simply a large bistouri caché. Rizzoli states (*Clinique Chirurgicale*) that in cases of shoulder presentation with or without prolapse of the arms, after the waters have come away, and when the uterine walls have contracted close on the body of the fœtus, then after delivery of the body the head may lie too high up for convenient application of the usual instruments. "I prefer to cut through the dorsal or lumbar spine; then it is easier to deliver the head by seizing on the arms than it is to do so when the head is separated from the neck or only attached to it by some soft tissues. . . . . The division of the vertebral column can be effected either by big scissors or with 'mio fetotomo.' It is a knift, blunt at its extremity, with its cutting edge protected by a sheath, which can be drawn down along the handle, as far as desired, by means of a thumb-piece. The knife is passed into the vagina with the cutting-edge guarded by the sheath, the edge is then placed against the part of the fœtus which is to be divided, and the sheath is drawn down. Then the parts are cut as much as is required, and the sheath is pushed up over the cutting-edges before the knife is withdrawn."

Rizzoli gives measurements in the above description, the handle is made out to be a little shorter than in this sample, where that

part of the instrument is made of ivory, roughened at the sides. The back is almost rectangular at its free extremity where it joins the cutting-edge. *Royal Society of Medicine.*

133A. **Rizzoli's Embryotome or Fetotomo (II).**

Length 10¾ in. (27.3 cm.); length of blade 5¼ in. (13.3 cm.); breadth ½ in. (1.27 cm.), 1 in. (2.5 cm.) from the extremity, from when the back of the blade curves towards the cutting-edge, ending in a point.

A similar instrument to No. 133, but rather larger. The back of the blade curves gradually until it meets the cutting-edge at the free extremity. The thumb-piece is longer than in No. 133 and oval, not round.

It is not clear which of these two embryotomes is the original pattern. Both were presented to the Obstetrical Society of London by Professor Rizzoli, the inventor.

Royal Society of Medicine.

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134. **Smellie's Double Crotchet.**

Weight 12½ oz. (354 grms.); length 1 ft. (30.5 cm.); length of blades to lock 7½ in. (19 cm.); greatest breadth of blades (at extremities where they turn in to form the crotchet ⅝ in. 1.5 cm.); greatest breadth between closed blades 3½ cm. (8.8 cm.).

Handles coated with smooth ebony, stout palm-rest, English lock, no shoulder. Blades with no distinct shanks, flattened antero-posteriorly except near the crotchets; no pelvic curve. The crotchets are short, turning in and down for about ¾ in. (2 cm.) and rather blunt, but thin-edged.

"*Mesnard's Double Crotchet*: Exhibited by Dr. Cory. This instrument was recommended by Smellie, and is figured, as applied to the child, as his work. It consists of two crotchets which articulate by the English forceps-lock," Catal. Obstet. Soc., 1866, p. 44.

In Smellie's "Treatise on the Theory and Practice of Midwifery" Edition of 1779, vol. i, a good drawing is given of the crotchets articulated and "a view of the back part of one of the crotchets which is twelve inches long" (the same length as in this sample), Plate 39. Smellie describes the instrument as "a pair of curved crotchets locked together in the same manner as the forceps. It is very rare that the use of both is necessary, excepting when the face presents with the chin turned to the *sacrum*, and when it is impossible to move the head to bring the child footling, or deliver with the forceps. . . . . They may also be useful to assist when the head is left in the uterus, and one blade is not sufficient."

Royal Society of Medicine.

135. **Maygrier's Double Crotchet.**

Weight 1 lb. $7\frac{1}{2}$ oz. (666 grms.); length $16\frac{1}{2}$ in. (41.9 cm.); blades from tip to lock 8 in. (20.32 cm.); breadth of blades at their broadest measurement (near tips) 2 in. (5 cm.); maximum breadth across closed blades 3 in. (7.6 cm.); length of fenestræ $3\frac{1}{4}$ in. (8.2 cm.).

"Carter, No. 24, Rue de l'Odéon."
This dealer preceded Mathieu.

A very heavy instrument. Handles with palm-rest and English lock, and lined outside for over half their length with ivory, vertically fluted, the bare metal of the handles above the ivory cover is also roughened with oblique grooves. The blades, which have a pelvic curve, turn in at their extremities and lie in apposition for over an inch, and each blade can be used separately as a sharp crotchet. A short, broad fenestra occupies each blade below the crotchet, and the lowermost limit of the fenestra is wide and convex, for the convenient application of tapes when required.

This instrument was once popular on the Continent, being considered useful for the extraction of the dead fœtus. Maygrier figures it in his "Nouvelles démonstrations d'accouchements," 1822, Pl. lxxiii, having taken his drawing from a sample identical except that it has a modern French lock. Pl. lxvi, fig. 2, "extraction de l'enfant avec le forceps crotchet" represents the instrument in use. Maygrier states (*loc. cit.*, p. 66) that he has imitated it from Smellie, but with important modifications. He greatly preferred it to the *tire-tête*; it could be applied like an ordinary forceps, and the fœtal head could be compressed and dragged down as forcibly as was required with little fear of the blades slipping off, and even if they slipped no harm would be done to the maternal tissues. *Royal Society of Medicine.*

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136. **Radford's Crotchet.**

"The length is $13\frac{1}{8}$ in. (33.3 cm.); the blade with shank is $8\frac{1}{4}$ in. (21 cm.) long, the shank being 2 in. (5.08 cm.), the screw-part $\frac{3}{8}$ in. (0.9 cm). It is curved and flat, its widest part being $\frac{5}{8}$ in. (1.58 cm.), and becomes round and thicker towards the shank. The hook is nearly $\frac{3}{4}$ in. long (2 cm.), and turned from the general curve of the blade, and stands from it at its point about $\frac{3}{4}$ in. (2 cm.). The wooden handle is separate, and also serves for the blunt hook; it is $3\frac{7}{8}$ in. (9.8 cm.) long, and flat on the hook side. It has a circular metallic end $1\frac{1}{8}$ in. (2.8 cm.), which is hollow and threaded, to receive the threaded male end of the blade, along one side of which there is a groove, where is placed a small lever catch which falls into a notch on the rim of the shank; this steadies and fixes the blade when screwed up. The advantages of this instrument are that the blade is flat, and that it stands in a curved

direction from the shank." Cat. Obstet. Soc., 1866, p. 43 and fig. 40.

The handle is of smooth ebony, with a palm-rest; it is flat in front and convex at the back. The instrument with its long, slender shank gently curved, is an old type of crotchet. It may be compared with Clark's (No. 139) more modern type. This instrument and the blunt hook were presented to the Obstetrical Society by Dr. Radford. The shank bears the mark "R. Westbury, Old Mill Gate, Manchester," and on the other side "Dr. Radford." Nos. 137, 138 can be screwed on to the handle.

Nos. 136 to 141 are samples of a type of instrument once widely used. Already in 1866 it was written in the Cat. Obstet. Soc., 1866, p. 8: "The blunt and sharp hooks so frequently used formerly for alteration of the position, or for mutilation and subsequent extraction of the fœtus, have, since the invention of the forceps, fallen into comparative disuse." No. 91, David Davis's craniotomy forceps, or guarded head crotchet, ought, strictly speaking, to be placed here. It is quite a different instrument from Smellie's and Maygrier's double crotchets, Nos. 134, 135).

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136A. **Radford's Crotchet.**

(Extra and shorter, Unscrewed from Handle.)

A shorter crotchet, $6\frac{1}{2}$ in. (16.5 cm.) long without the screw, otherwise similar. The screw fits the handle in the preceding instrument (No. 136), and there is a notch on the rim of the shank for the lever-catch. No maker's name on the handle.

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137. **Radford's Blunt Hook.**

(Unscrewed from Handle.)

Length from free end of handle (same as for crotchet, preceding sample No. 136a) to bend of hook 12 in. (30.5 cm.); the shank from the screw to the bend measuring $6\frac{1}{2}$ in. (16.5 cm.).

The hook measures about $1\frac{3}{4}$ in. (4.4 cm.), and is bent so as to stand at an angle of about 85.0 to the shank. The entire shank and hook are cylindrical and of an almost uniform diameter of $\frac{1}{4}$ in. (0.63 cm.) throughout. The screw fits into the handle belonging to No. 136 and there is a notch on the rim of the shank, as in the crotchet (No. 136A), to receive the lever-catch.

Presented, with the preceding specimen, to the Obstetrical Society of London by Dr. Radford. *Royal Society of Medicine.*

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138. **Radford's Blunt Hook.**

A later pattern, presented to the Museum of the College of

Surgeons by the inventor five years after he had given the preceding instruments to the Obstetrical Society. Instead of being uniformly cylindrical, like the preceding blunt hook, No. 137, it is flattened, becoming rounder and thicker towards the sirew-end, like the crotchet. The curve is sharper than in the preceding blunt hook. There is, as in the two preceding instruments, a notch in the rim of the shank to receive the lever catch on the handle which is wanting. The screw of this blunt hook does not fit into the handle (No. 136), belonging to the crotchet 136A, and the blunt hook (No. 137).

"R. Westbury, Old Mill Gate, Manchester," and Dr. Radford."

(The Cat. Obstet. Soc., Lond., 1866, described (pp. 11, 12 and 13) this form of Radford's blunt hook. "The blade becomes thinner and wider (nearly $\frac{5}{8}$ in. or 1.5 cm.) as it passes towards the bend; which makes a kind of hook forming a small segment of a circle whose diameter is $2\frac{1}{8}$ in. (5.4 cm.). Its surface is flat, and it is well rounded off at the edges. This instrument is easily passed over the thigh of the infant, causing less injurious pressure than the ordinary blunt hook.") *Dr. Radford*, 1871.

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139. **Clark's Blunt Hook and Crotchet.**

Length from height of concavity of blunt hook to corresponding point on crotchet $10\frac{1}{4}$ in. (26 cm.). "Weiss, London."

A solid steel bar bent at one end to make a crotchet, and at the other to form a blunt hook employed for facilitating or hastening the passage of the breech, thigh, or arm, when arrested in their progress through the pelvis, or where immediate delivery is demanded.

A piece of ebony about $2\frac{1}{2}$ in. long is let into the metal on each side of its middle portion.

Figured in Kilian, "Armamentarium," Pl. xii, Fig. 2, and Witkowski, "Arsenal," Fig. 273, p. 53. This instrument was once widely used in the United Kingdom.

Royal Society of Medicine.

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140. **Lazarewitch's Blunt Hook (I).**

This instrument is $11\frac{1}{2}$ in. (29.2 cm.) long; it consists of a straight nickel-plated steel bar which, at the upper end, is bent at an angle of about 120°; at the bend, which is blunt and curved, is a wide slot $\frac{1}{2}$ in. (1.27 cm.) long; the lower end forms a ring 1 in. (2.5 cm.) in diameter; the border of the ring at the free end is perforated by a wide slot $\frac{1}{2}$ in. (1.27 cm.); weight 4 oz. (113 grms.).

"Gerber, St. Petersburg."

Presented to the Obstetrical Society of London by Professor

Lazarewitch in 1893. It differs from the "Lazarewitch's Blunt Hook," exhibited in 1866, and described and figured in the "Cat. Obstet. Soc.," 1866, p. 8, fig. 7, in the upper end, which in the older variety, was bent at an angle of 75°, bore the slot or eye nearer the point, and was much less rounded at the bend, and also differs in the opposite end which in fig. 7, *loc. cit.*, is represented with a single triangular opening.

The designer considered in 1866 that in the extraction of the child by the thigh the right-angled hook was not so liable to injure the genitals as the bowed hook. The rounded extremity of the hook was less likely to injure the vagina during extraction. The instrument could be used for traction upon the child's neck in its oblique position when decapitation was necessary, also for placing a plaited silk noose over the foot, also for reducing a prolapsed funis by a noose made by passing a thin narrow silk tape through the slot in the hook. The designer seems to have waived his objections to the incurved hook, probably finding the right angle awkward; and in this modfiication the lower or ring-end was used for reducing the funis. See next instrument. This sample was made after Lazarewitch had left Charkoff for Petrograd. (See note, No. 131). *Royal Society of Medicine.*

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141. **Lazarewitch's Blunt Hook (II).**

A solid nickel-placed steel bar, very heavy; length 10 in. (25.4 cm.); yet, although $1\frac{1}{2}$ in. (3.8 cm.) shorter than the preceding instrument, it weighs $6\frac{1}{2}$ oz. (184 grms.), or $2\frac{1}{2}$ oz. (over 70 grms.) heavier. "Grünblatt."

This instrument is quite different from the preceding, instead of one end being flattened and perforated, both ends bear a hook. Both hooks are extremely blunt. One is solid, bent on the stem at an angle of 75°, hardly curved, and half an inch (1.27cm.) wide at its free end. The other is of about the same length, bent a little more acutely, but distinctly curved and not quite so broad at the free end which bears two slots for tapes. There is another slot in the stem half an inch (1.27 cm.) below this hook.

Presented to the Obstetrical Society of London by Professor Lazarewitch in 1893. It resembles the original Lazarewitch's blunt hook, figured in the Cat. Obstet. Soc., 1866, p. 8, fig. 7 in the nearly rectangular bend of the hooks, whilst unlike the original, and the preceding specimen, each end bears a hook. It seems to be an intermediate form, and it was made before Lazarewitch left Charkof. Thus the inventor ultimately used, it appears, a deeply-curved hook, but restored the ring at one end. See note on Lazarewitch's modified Lobster-claw Embryotome (No. 131). *Royal Society of Medicine.*

142. **Lee's Cannula for Puncturing Membranes (I).**

Weight 1½ oz. (42.3 grms.); length 11½ in. (29.2 cm.).

A silver cannula about ¼ in. (0.6 cm.) in diameter and slightly curved towards the end. It conceals a small trocar fitted with a spring. On pressing the button at the lower end of the trocar with the thumb, the fore and middle fingers being placed in the rings outside the cannula, the trocar protrudes for ⅜ in. (0.37 cm.) from the upper end of the cannula. The trocar has a regulator above the button to prevent it from projecting too far when in use. Dr. Robert Lee's cannula is described in the Cat. Obstet. Soc., 1866, p. 189, but this sample did not belong to the museum of the Obstetrical Society. *Penrose Williams, Esq.*, 1912.

142A. **Lee's Cannula for Puncturing Membranes (II).**

Weight 2 oz. (57 grms.); length 12½ in. (31.75 cm.).

A similar instrument, somewhat longer. Instead of being made entirely of silver, it has a chequered ebony handle, with a deep groove about its lower end to lodge the operator's fore and middle fingers when he presses the button with his thumb, thus replacing the rings.

Once the property of Dr. C. H. F. Routh.

Dr. Amand Routh, 1914.

142B. **Lee's Trocar Cannula: and Sound for Applying Electricity.**

Weight 1 oz. (28.3 grms.); length of cannula 6 in. (15.2 cm.); of the metal sound—(*perce membrane* when straightened out)—12½ in. (31.75 cm.).

A triple instrument; a vulcanite cannula for inducing premature labour; a *perce membrane* or trocar, the opposite end of which is blunt and if placed uppermost and bent, as in this sample, serves as a uterine sound; and a contrivance for applying electricity to the uterus. For the third purpose, the cannula being a non-conductor can be made to expose as much as is desired of the end of the sound, and can then be fixed by the screw in the ring at its lower end. There is a sliding vulcanite handle, chequered on its upper surface so as to be, like the screw in the cannula, a guide to the position of the sound. This handle also formed a connection with the wire from the battery.

Radford's troca and cannula (Witkowski, "Arsenal Obstétrical," Figs. 123—124, p. 29) was a simpler and earlier instrument, the cannula bore a handle with a screw to check the trocar which slid along it. *Royal Society of Medicine.*

143. **Dubois' Perce Membrane.**

11½ in. (28.2 cm.) long. Flattened polished whalebone capped at the lower end with metal and made to disarticulate in the middle, the halves being joined by a metal sheath with slot arrangement.

The essential part of this *perce-membrane* is a spear-headed piece of bone ⅝ in. (1.5 cm.) long, fitted by a metal ferrule on to the upper end of the whalebone.

This instrument is the "baleine pointue de Dubois" (Charpentier, "Traité Pratique des Accouchements," Vol. ii, p. 846) used for induction of premature labour and abortion. In 1842 P. Dubois induced abortion in a case of pelvic contraction, the first time the operation had been undertaken for that complication in France (*ib.*, p. 867).

In the Cat. Obstet. Soc., 1866, it is entered under "List of Instruments presented to the Society's Museum" (p. 229' as "*Pierce* (*sic*) *Membrane,* Dubois.' Presented by J. R. Traer," without any details. *Royal Society of Medicine.*

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144. **Rizzoli's Ovum Forceps.**

"Professor Rizzoli's *Ovum Forceps* measured 13½ in. (34.3 cm.) in length; they were straight and fastened, like a pair of scissors, the handles locking and unlocking by a pivot lock. The blades proper were 2½ in. (6.35 cm.) long, fenestrated and straight; the handles were of the ordinary scissors kind." Cat. Obstet. Soc., 1866, p. 7. "Lollini."

The inner sides of the blades are roughened by numerous small projections about ⅛ in. (0.3 cm.) apart. The blades, 2½ in. (6.35 cm.) long, are narrow, not exceeding ¾ in. (2 cm.) at their middle and broadest portion and bear narrow fenestræ. In this sample, contrary to that described in the above quotation, they show a slight but distinct pelvic curve, and the shanks are flattened antero-posteriorly and super-imposed. The handles bear scissor rings which do not project inwards, and long parallel shanks.

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145. **'Charrière's' Ovum Forceps.**

Length 11½ in. (29.2 cm.); extremity to lock 5 in. (12.7 cm.); length of fenestra of each blade 1⅝ in. (4.12 cm.); greatest breadth ⅜ in. (.9 cm.). "Charrière à Paris."

Blades not highly convex externally, fenestra narrow, curve of shanks below fenestræ moderate. The shanks are flattened antero-posteriorly and super-imposed. French lock (screw-pivot with

thumb-piece and mortise). Shanks of handles strongly bowed out in the middle of their course to admit a fixed rack attached to inner side of one handle, and a spring-clip on the other which can be put in or out of action by a movement of the finger.

A variety of Levret's *Pince à faux germe à pivot* (see Witkowski's "Arsenal Obstétrical," figs. 156, 157, p. 35) constructed about 1870, but Charrière made instruments of this type many years earlier; the pattern is figured in Bernard and Huette's "Précis iconographique de médecine opéraroire," 1856, Pl. xxv, fig. 7, "Pince à faux germe." The rack and spring clip are also seen in Charrière's uterine dressing forceps in this collection. Several British and foreign obstetricians introduced forceps of this type, with trifling modifications. The essential feature, the narrow fenestrated blades curved forwards, date from Levret's days.

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146. **Weiss's Ovum Forceps.**

Length 11½ in. (29.2 cm.); of blades to lock 7 in. (17.7 cm.); 2 in. (5 cm.) of the shanks are super-imposed when the blades are closed, so that then the blades bound a gap 5 in. (12.7 cm.) in vertical measurement; the greatest space across the closed blades is 1¾ in. (4.4 cm.); the space between the tops being ¾ in. (0.6 cm.); the fenestræ are 3⅜ in. (8 cm.) long, ⅝ in. (1.5 cm.) at their broadest point, towards the tip; the greatest breadth of each blade is ⅞ in. (2.2 cm.) near the tip. "Weiss, London."

A delicately-made instrument, all nickel-plated steel, excepting the lower 2 inches (5 cm.) of handles which are coated with smooth ebony forming a palm-rest with groove for tapes. The blades have a moderate cephalic curve and are otherwise straight. French lock, thumb-screw fitting into a notch. When the screw is properly fixed the tips of the closed blades lie a quarter of an inch apart, and the handles do not meet.

This instrument, unlike Levret's, Simpson's and most other ovum forceps, or *pinces à faux germe,* has no pelvic curve, and resembles a straight long forceps of small proportions. There is an entry in the Cat. Obstet. Soc., 1866, under the List of Instruments presented to the Society's Museum (p. 228) as "Ovum Forceps . . . . . F. W. Dunne," but Dunne's ovum forceps was a wooden instrument working like a glove stretcher (*ib.*, p. 7), and the only other ovum forceps in the collection was Rizzoli's. As regards this instrument nothing is certain except that it was made by Weiss. It was apparently intended for a fœtus of the third month or later. *Royal Society of Medicine.*

146A. **Tongue Forceps used as an Ovum Forceps.**

Length $9\frac{1}{2}$ in. (24.1 cm.); of blades to lock $3\frac{1}{2}$ in. (8.87 cm.); of fenestra on each blade 1 in. (2.5 cm.); breadth of fenestra, at free end of blades $\frac{5}{8}$ in. (1.5 cm.). "Coxeter, London."

Presented to the Obstetrical Society of London as a "Tongue Forceps used as an Ovum Forceps," name of donor not preserved. The free end of each blade is over half an inch broad, corresponding to the base of the triangular fenestra, the inner surface, bordering on the fenestra, is smooth and slightly convex. There is a screw-lock; the shanks bear a rack in their middle portion; they are bowed outwards from half an inch above that point down to the rings, but are super-imposed above as far as the lock when the blades are closed.

Although this instrument closely resembles the Guy's Hospital pattern tongue forceps, excepting that the blades are convex and smooth instead of being rough on the inner side, a very similar instrument is figured in Kilian's "Armamentarium Lucinæ" (1856) and reproduced in Witkowski's "Arsenal Obstétrical," fig. 155, p. 35, as *Lüer's Pince à faux germe* or ovum forceps; the triangular fenestræ are equilateral, and the inner surface of the blades around them chanelled, as in many tongue forceps. McClintock designed an ovum forceps closely resembling the instrument here preserved. In Weiss's "Illustrated Catalogue of Surgical Instruments," 1863, Pl. xxxii, fig. 3, a somewhat similar instrument is called a "fenestrated tumour forceps."

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147. **Pelvimeter: Stein-Aitken Type.**

Length of posterior blade 11 in. (28 cm.); from extremity to lock $5\frac{1}{2}$ in. (14 cm.); length of anterior blade $10\frac{3}{4}$ in. (27.3 cm.), not taken along the curve; from extremity to first perforation for pivot of lock 5 in. (12.7 cm.), to second perforation $6\frac{1}{4}$ in. (15.8 cm.). The blades widen to the extent of half an inch, close to the extremity.

The instrument is made after the pattern of a forceps, and composed of two blades. The posterior is a little longer than the anterior, and almost straight, the anterior more curved, and both are curved and expanded at the tip. A graduated brass scale (bearing, however, no markings, in this sample) is attached to the end of the handle of the anterior blade, passing through a slot in the corresponding part of the posterior blade. There is a box or male and female lock, the anterior is the male blade, which is perforated at two points $1\frac{1}{4}$ in. (3.17 cm.) apart for a screw pivot so that it may be fixed to its fellow (which bears one perforation), at

two points, according to the desired length. The posterior blade is introduced first, and its tip placed against the promontory of the sacrum, then the anterior blade is slipped on to its fellow and they are separated by parting the handles. The brass scale indicates the extent to which this separation can be effected. The double lock arrangement in this sample somewhat resembles a similar mechanism in Dusée's Obstetric forceps (No. 1).

This instrument, designed for the direct measurement of the conjugata vera, is of the Stein type, made after the form of a forceps, contrasting with Coutouly's pelvimeter for the same purpose (see Kiwisch's pelvimeter, No. 148) made after a shoemaker's measure. As in Stein's, and in its ultimate development Earle's instrument (No. 154), the blades bend laterally from the lock, but Stein's had rings on the handles as in scissors. Unlike Stein's and Earle's where there are parallel blades separated by approximation of the handles, the handles in this instrument cross, as in scissors, so that when they are closed the blades are also approximated. Aitken first designed a pelvimeter with blades which crossed scissor-fashion, but they were not bent laterally, and their handles terminated in rings, where, however, they bore a scale, as in this instrument. In this, as in Stein's and Aitken's pelvimeter, there is no self-registering index on the scale and no spring between the handles. *Royal Society of Medicine.*

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148. **Kiwisch's Pelvimeter.**

Vaginal or posterior arm 11 in. (28 cm.) to bend, bend to extremity, measured by the curve 3 in. (7.6 cm.); urethral or anterior arm, 4 in. (10.16 cm.) to bend, 3 in. (7.6 cm.) from bend to extremity. The bend forms an angle of about 80°.

"Matthews, London."

In order to avoid the introduction of both arms into the vagina, Kiwisch constructed the anterior arm so that it could be passed into the urethra. That arm was next fixed in position by screwing down the concave metal plate on to the surface of the Mous Veneris. The posterior arm was then introduced into the vagina, and its extremity placed against the promontory of the sacrum. The screw on the urethral arm was adjusted to the slot in the vaginal arm and their relative positions ascertained by means of two graduated scales. One scale is marked along the slot in the vaginal arm, the other is marked on the bar connecting the urethral arm with the screw and metal plate. This sample must have been used freely as the scales are almost effaced. The relative positions being ascertained, the arms were afterwards withdrawn and refixed in the same position outside the pelvis, when the distance between their

extremities could be accurately measured. See Kiwisch, "Zur Lehre von der Beckenneigung und Beckenmessung, nebst Angabe eines neuen Messinstrumentes," *Beiträge zur Geburtskunde,* 1846, Pt. I, p. 1, and Pl. 1.

Beck somewhat simplified this type of instrument, both being developments of Coutouly's better-known pelvimeter where one arm slid on the other, as in the rule used by shoemakers for measuring the length of the foot. (See notes to description of No. 147.) Both Beck's and Kiwisch's were introduced into the urethra for direct measurement of the conjugata vera.

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149. **Van Huevel's Pelvimeter(I).**

"Luer à Paris."

"Invented about the year 1845. It consists of two arms, with a compass-like joint and a scale forming a segment of a circle near the hinge (the scale is not marked in this sample). One arm is nearly straight, having a very slight curve near its distal extremity. This arm measures 11½ in. (29.2 cm.) in length, and at about its middle has a projecting sort of handle of a ring-shape. To this arm a scale is also immovably attached. The other arm is straight for a distance of 8½ in. (21.5 cm.) from the hinge. The remaining 3½ inches (8.87 cm.), is sharply curved towards the other arm. An extra length of 3 inches (7.6 cm.) can be given to the second arm by an arrangement like that of a telescope slide, or it can be shortened to any required extent. Further, at the extremity of this arm there is provision for lengthening the arm in the direction at right angles to that of the arm (*sic*) to the extent of two inches (5.08 cm.), and here there are means for fine adjustment by a screw. The scale moves freely through a slit in the second arm, and when the compass is in use, the scale becomes immovable at any given point by slightly moving the little lever placed over the slit through which the scale runs. The instrument is intended for the double purpose of measuring the distance from the sacral promontory to the exterior of the pubic symphysis, and also the thickness of the pubic symphysis and soft parts covering it externally. The antero-posterior diameter of the brim of the pelvis is obtained by subtracting the second of these measurements from the first. In taking these measures, the first arm is the one which is applied internally, and its extremity is first made to touch the sacral promontory. The two arms are fixed at their proper places and retained in that position until after the instrument is withdrawn, when the distance between the arms at their extremities is measured off. During the first part of the operation the second arm is made

shorter than the first, according to the angle of inclination of the pelvic brim; but in taking the thickness of the pubic symphysis the two arms shauld be nearly the same length. This instrument can also be used and applied for the external measurements alone, after Baudelocque's manner. It was exhibited by M. Luer, Paris." Cat. Obstet. Soc., 1866, p. 151. *Royal Society of Medicine.*

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150. **Van Huevel's Pelvimeter (II).**

"Denis, Bruxelles."

Similar to I, except that it is a little longer, the straight arm measuring 12 inches (30.5 cm.) and bearing the characteristic ring-shaped handle on its outer side. The lower portion of the curved arm, in which the upper part slides, is longer and more slender. Both pelvimeters are equally well-finished, but in neither does the scale bear any marks. *Royal Society of Medicine.*

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151. **Van Huevel's Pelvimeter (III).**

A larger instrument than I. It is mounted on an ivory handle connected with the compass joint by a curved and fenestrated bar of steel. "Lollini" (Bologna).

Instead of the telescope slide which lengthens the second arm, there is a rack and pinion, and a scale is marked on the sliding arm. The screw arrangement for lengthening the arm is much more complicated and arranged so as to allow of lateral movement, and flexion on a hinge-joint of the movable extremity of the arm. The scale is fixed at the slit in the arm, through which it runs by a simple thumb-screw, not a lever. The other arm, which bears the characteristic ring-handle, and to which the scale is fixed, is flattened and but slightly curved at its free end, but bears at that end a piece of steel fitted on to it by a screw. This piece of steel projecting for an inch (2.5 cm.) beyond the arm bears, on a hinge, a probe-like termination $2\frac{1}{4}$ in. (5.7 cm.).

This instrument was presented to the Obstetrical Society by Professor Rizzoli, who modified it from Van Huevel's model, as he modified many other surgical and obstetrical instruments preserved in this collection (see Nos. 47, 69, 77, 117, 128, etc.).

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152. **Rizzoli's Pelvimeter.**

"Fli Lollini."

"*Professor Rizzoli's Pelvimeter* is a modification of Van Huevel's instrument. It consists of two principal parts, the whole forming a compass, and connected in such a manner that either arm can be lengthened or shortened at will, and so fixed by means

of a screw. One arm measures with its handle 18½ in. (46.5 cm.). For 14 in. (35.6 cm.), including the handle, it is straight; the remaining 4¼ in. (11.4 cm.) has a slight curve. The other portion measures 12 in. (30.5 cm.); at its free extremity it has a screw 3½ in. (8.87 cm.) long, traversing a perforation in a direction at right angles to the arm. The instrument is adapted for measuring the pelvis according to Baudelocque's method, or for taking the measurement from the sacral promontory internally to the anterior surface of the pubic symphisis. The instrument was made by the Brothers *Lollini* of Bologna." Cat. Obstet. Soc., 1866, p. 152, and Fig. 150. The description of this "Pelvimetro-isterometro" first appeared in an Italian Medical Serial in 1856. A complete account of Professor Rizzoli will be found in his "Nuovo Pelvimetro-isterometro e considerazioni sull' Attegiamento dell' embrione e del feto nell' utero della Gestante" (*Collezione delle Memorie chirurgiche ed ostetriche del Professore Rizzoli,* Vol. ii, 1869 p. 439. A copy is preserved in the Library of the Royal Society of Medicine).

This is the only pelvimeter mentioned in Cat. Obstet. Soc., 1866, as "presented to the Museum" (p. 229). The remainder were purchased or, as in the case of Nos. 155 to 158, presented after 1866.

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153. **Howitz's Pelvimeter.**

"C. Nyrop."

"*The Pelvimeter of Dr. Howitz,* of Copenhagen, was invented and exhibited by him at the "Philiatris," in Copenhagen, Oct. 22, 1861. It is an internal pelvimeter. Two arms in apposition are introduced into the vagina and then separated by means of two handles which are continuations of the arms. The whole instrument is 12 in. (30.5 cm.) long. Each of the two arms is perfectly straight. One arm is 5½ in. (14 cm.) long, and its length is fixed; the other arm, also 5½ in. (14 cm.), can be lengthened or shortened at will to the extent of about 1½ in. (3.8 cm.) by means of a rod sliding within it. The extent of this lengthening is indicated to the observer on a scale marked on the lower end of the sliding rod, projecting below the arm, which bears a travelling screw. On another scale, fixed to the handles, is indicated the degree to which the arms are separated internally. The two distal extremities of the arms are connected together in a peculiar manner. A rod, or rather two rods, sliding after the manner of a telescope one within the other, pass from the extremity of one arm to the extremity of the other. This cross-bar is so fixed that the shortening or

lengthening of the arm can readily take place. The cross-bar has a minimum length of $2\frac{7}{8}$ in. (7.3 cm.) and a maximum length of 5 in. (12.7 cm.), capable of increase, however, to 6 in. (15.25 cm.) by screwing on an additional piece at one end of the cross-bar. The instrument is used thus :—Introduced in apposition, the arms are afterwards separated, and the two extremities of the cross-bar brought into contact, one with the sacral promontory the other within the inner surface of the pubic symphysis. The construction of the instrument allows this to be done, whatever be the angle of inclination of the pelvic brim, provided no hard substance intervene between the two points in question. To make an observation, the two scales must be simultaneously inspected, the instrument withdrawn, and then reset in the same position. The length of the cross-bar is now measured, and this gives the required antero-posterior diameter, or the conjugate diameter, or true conjugate diameter of the brim. The instrument is adapted for taking the measurement of the pelvis also below the brim." Cat. Obstet. Soc., 1866, p. 158, and Fig. 156.

The arms are parallel, not crossing as in scissors, or obstetric forceps, and are perfectly straight, whilst their handles are curved backwards near the lock and forwards near the free end.

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154. **Lumley Earle's Pelvimeter.**

"Matthews."

"It consists of a pair of curved blades about 7 inches (1.7 cm.) long, terminating in two small bulbs, which are kept in close opposition by the curved steel spring placed between the two handles. At the extreme end of the handles, and fixed to one of them is a steel plate engraved so as to indicate the extent to which the ends of the blades are separated when in use. On the outer edge of this plate slides a small clamp, which is moved along by the handle, and points on the indicating plate the number of inches or parts of an inch between the open blades. This clamp remains in the position it is placed by the handle. In using the instrument it is intended to be introduced with the curve adapted to that of the sacrum, and the point guided by the finger to the back of the symphysis pubis. The handles are then compressed and the blades opened, so that the second blade reaches the projecting promontory of the sacrum, having done which the instrument is again closed by force of the spring and withdrawn, when the pelvic diameter can be read off the indicating plate. It is hoped that this pelvimeter, combining accuracy of results with great facility of application and as little inconvenience to patient and practitioner as possible, wiull remove a prejudice which exists against pelvi-

meters generally." J. Lumley Earle (Birmingham), "New Pelvimeter," *Trans. Obstet. Soc., Lond.*, vol. iii (1861), p. 145, with figure of the original instrument. It closely resembles an instrument described as Harris's pelvimeter (see Cat. Obstet. Soc., 1866, p. 154, fig. 152, showing the anterior blade longer than the posterior) which was modified, it is implied, from Murphy's. In Earle's original pattern (*ib.*, fig. 153) the blades or limbs were of equal length, but he subsequently modified his pelvimeter, making the blades much less curved and the anterior shorter than the posterior (*ib.*, p. 156 and fig. 154). The sample here exhibited, however, is of the older type, the blades being of equal length, and this type is still much in use. The spring, as in all the drawings of Earle's pelvimeter, above referred to, is fixed to the inner side of the handle of the posterior blade; in some modern samples it is fixed to the same part of the anterior blade. The terminal bulbs in this pelvimeter as now manufactured are made less broad and more tapering than in this sample. Presented to the Obstetrical Society by the inventor.

This pelvimeter represents the final development, accepted by the majority of obstetricians, of Stein's instrument for direct measurement of the conjugata vera (see No. 147). Harris's original pelvimeter was exhibited at a meeting of the Obstetrical Society of London by Dr. Greenhalgh in July 1864. See *Trans. Obst. Soc., Lond.*, vol. vi, 1864, p. 186. It was invented in 1858, and had much stouter limbs, broader free ends, and longer handles than Earle's or than that described and figured as Harris's pelvimeter in the Cat. Obstet. Soc., 1866, fig. 152, p. 154, which is made out to resemble Dr. Murphy's instrument, "but the curve of the blade is greater." The catalogue gives a short description of Murphy's internal pelvimeter," p. 153. *Royal Society of Medicine.*

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155. **Lazarewitch's Pelvimeter (I).**

"Grünblatt" (Charkoff).

"*The Pelmimeter of Professor Lazarewitch of Charkoff, Russia,* was invented by him and exhibited on this occasion (*i.e.*, the Obstetrical Society's Conversazione, March 1866) for the first time. It is an universal pelvimeter, adapted for taking the external measurement, the internal measurement, or the external and internal combined measurements of the pelvis." It consists of a short handle measuring $3\frac{1}{2}$ in. (8.87 cm.) in length and $2\frac{1}{2}$ in. (6.35 cm.) as far as the pivot, which is of the scissors joint type. Below the pivot the handles are bowed outwards, and one is continued into a curved scale, triangular, with the apex running in a notch in the free end of the opposite handle. The original sample, shown in 1866, had rings on its handles. When used for

external measurement, to the slender semi-circular rod on one handle another similar rod is opposed, being fixed into the opposite handle by a simple contrivance. For internal measurement the removable semi-circular rod is taken out of its joint and replaced by another with a double curve, its blunted extremity being applied to the sacral promontory.

For a complete description of "the pelvimeter of Professor Lazarewitch" see Cat. Obstet. Soc., 1866, p. 161, and Fig. 158. Just as this sample (I) differs in certain points from the next (No. 156) so there are several and more important differences between this sample and that represented in Fig. 158 *loc. cit.* As in II the removable semi-circular rod bears a scale with notches (4 to 25 cm.) on its concave side.

The Catalogue gives a lengthy description of the manner in which the pelvimeter should be used, including the employment of a separate semi-circular scale to aid in determining the antero-posterior internal measurement of the pelvis in different situations, besides those usually measured. But no such scale was included in the box containing this sample or the next, nor is there any trace of any contrivance to fix a scale on to the handles or blades.

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156. **Lazarewitch's Pelvimeter (II).**

This instrument, kept in a shallow flat box with a ring pelvimeter for skeleton pelves, closely resembles I. The curved scale attached to one handle is much stouter and therefore more convenient to read. As in I the removable semi-circular rod bears a scale with notches (4 to 25 cm.) on its inner or concave side.

I and II seems to be later and simplified modifications of the instrument figured in the Catalogue, in which both semi-circular rods for external measurement could be detached, to be replaced by the bar with a double curve (as in this instrument and in No. 155), and by another bar almost straight but with the portion to be introduced into the anterior part of the pelvic cavity made slightly convex forwards (*loc. cit.*, p. 162, Fig. 158).

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157. **Lazarewitch's Pelvimeter for Skeleton Pelves.**

(*Contained in the same case as Pelvimeter* 11.)

It consists of a short, thick steel bar 5 in. (12.7 cm.) long, bearing a 13 cm. ($5\frac{1}{8}$ in.) scale. Two long slender bars $8\frac{1}{2}$ in. (21.5 cm.) in length are attached by rings at right angles to the shorter bar, along which they can be moved for purposes of measurement, and fixed at any desired point by a screw.

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158. **Lazarewitch's Ring Pelvimeter.**

(Contained in the same case as Pelvimeter 11.)

Three metal rings, made to suit different sizes of fingers. Each bears a metal loop on its outer surface.

A piece of silk is tied into the metal loop of one ring which is passed on to the explorer's middle finger. It is drawn through the metal loop of the ring on the first finger. Silk of a kind that hangs "dead," that is, does not curl up, should be employed. The internal measurements of the pelvic cavity may thus be ascertained. The fingers were parted till they touched the opposite sides of the pelvis, thus they were brought together and withdrawn. The extent to which the silk had been drawn out was then measured. Rings were sometimes provided with a rod bearing a scale affixed to the loops. The ring pelvimeter was once believed by some authorities to afford the explorer a more correct mechanical definition of the measurements than could be obtained by purely mechanical contrivances. It proved, however, quite unreliable, and has long fallen into disuse.

Koppe (Witkowski, "Arsenal Obstétrical," fig. 44 (8), p. 18) measured with silk attached to the thumb and forefinger and connected with an indicator strapped on to the forearm.

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159. **Calliper Pelvimeter for Skeletons.**

A steel calliper with the usual two limbs, measuring 4 in. (10.16 cm.) from the joint to the closed points. The limbs tail off into a handle. The handles when super-imposed measure 4 in. (10.16 cm.) from the joint to their extremities. The joint is a hinge covered on each side with a flat brass plate $\frac{3}{4}$ in. (2 cm.) in diameter. One limb bears a brass dial, marked for inches; it curves over the opposite limb which bears an indicator as in Charrière's and other calliper pelvimeters. The extremities of each handle bear a short rectangular projection pointing outwards, serving for internal measurement of the pelvis. The incurved free ends of the callipers serve for external measurement; both internal and external measurements are indicated on the dial.

Preserved in the Museum of the Obstetrical Society of London as a "Calliper Pelvimeter for skeletons: for external and internal measurements." Donor's name not recorded.

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End of Part II.

Descriptive Catalogue

OF THE

Gynæcological Instruments

IN THE

Museum of the Royal College of Surgeons of England

COMPILED BY

ALBAN H. G. DORAN

Fellow of the College

1921

CATALOGUE.

160. **Spencer Wells's Trocar and Cannula (I).**

This and the two following instruments, Nos. 161 and 162, show the development of the trocar and cannula under Spencer Wells's hands, while Nos. 163, 164 illustrate certain points of detail.)

Length 11½ in. (29.2 cm.); length of the cannula, with the trocar extruded ready for tapping, 5 in. (12.7 cm.); diameter of cannula ¾ in. (2 cm.). The metal tube for attaching the rubber tubing is of the same calibre.

The trocar is solid and internal, the cannula smooth and external. Ebony handle.

"Mr. Spencer Wells's Trocar and Canula (*sic*) for ovariotomy, with tube at right angles for attachment of elastic tubing, was exhibited by Ferguson, and is here shown (Fig. 144)." Cat. Obst. Soc., 1866, p. 147. The drawing represents this identical sample.

In "Diseases of the Ovaries," 1872 edition, pp. 267-8, Sir Spencer Wells writes: "I regard the improvement in the trocar which provides against the entrance of air into the cyst, during the escape of fluid, as an important element in the diminution of the mortality after tapping. We are indebted to Mr. Charles Thompson of Westerham for introducing the simplest and most effectual mode by which this object can be attained. This instrument was described in the 'Medical Times and Gazette,' March 27th, 1858,[1] as 'a new trocar for paracentesis thoracis' . . . . . As soon as I read this description of the new trocar, I saw how useful it would be, both in tapping ovarian cysts and in ovariotomy, and I had instruments made with cannulas (*sic*) of different lengths and calibre suitable for both purposes."

This trocar is the earliest pattern of its kind.

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161. **Spencer Wells's Trocar and Cannula (II).**

Measurements and calibre as in No. 160 Trocar, solid and internal, cannula ringed and external, ebony handle.

1. Charles Robert Thompson (Westerham), "On a New Trochar (*sic*) for Paracentesis Thoracis," *Med. Times and Gaz.*, ii., 1858, p. 329.

The cannula bears thirteen rings. "Finding that the cyst was apt to slip off the trocar, or that the fluid would escape between the perforation in the cyst and the cannula (*sic*), I had roughened rings applied to the canula, so that the cyst might be securely tied, fixing it to the canula, preventing the escape of fluid, and serving as an aid in drawing out the cyst." Spencer Wells, "Diseases of the Ovaries," ed. 1872, p. 335.

Sir T. Spencer Wells, Bart., 1872.

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162. **Spencer Wells's Trocar and Cannula (III).**

Length of trocar $6\frac{1}{2}$ in. (16.5 cm.); of cannula $6\frac{3}{4}$ in. (17.1 cm.); diameter of cannula $\frac{1}{2}$ in. (1.27 cm.); of metal tube for attaching the rubber tubing $\frac{3}{4}$ in. (2 cm.).

Trocar tubular and external, hooks to seize cyst wall. No handle.

This is the trocar and cannula which Spencer Wells ultimately adopted. The outer tube is the trocar, bearing a sharp point and oblique cutting edge. The cannula is an inner tube with its free end cut straight and blunt edged, and made to protrude beyond the point of the trocar after the perforation of the cyst. The cannula can be fixed as desired by a bayonet joint. (Further details about the tubular trocar are given with the description of No. 163). A curved metal tube, $5\frac{1}{4}$ in. (13.3 cm.) measured by the curve, is made to screw on to the trocar, the rubber tubing for conveying the ovarian fluid into the receptacle under the operating table being fixed to its lower end. The spring handles can be raised to allow the cyst wall to be drawn up. By letting go the handles, the operator fixes the cyst wall with the hooks.

Spencer Wells found that when the cyst was tapped during an ovariotomy the tying of its walls on to the roughened rings in the cannula (see No. 161) occupied too much time. Therefore, he adds, "I had two spring handles, each furnished with a series of hooks, adjusted outside the canula (*sic*), by which the emptying cyst could be immediately fastened to the cannula (see also No. 164); and this instrument, now sufficiently well-known and described as my ovariotomy trocar, I have used for several years past, and have been well satisfied with it." Spencer Wells, "Diseases of the Ovaries: Their Diagnosis and Treatment," 1872, p. 336. Wells first caused the hooks to be constructed in 1863. See notes to No. 164. *Alban Doran, Esq.*, 1914.

163. **Spencer Wells's Tubular Trocar and Cannula.**

Entire tube $7\frac{5}{8}$ in. (19.3 cm.); trocar portion 6 in. (15.25 cm.); calibre $\frac{1}{2}$ in. (1.27 cm.). Tubular trocar internal, cannula ringed and external; no ebony handle. "Maw, London."

"*Mr. Spencer Wells's Tubular Trocar and Cannula* in one, for ovariotomy, wherein the separate trocar is not required, was exhibited by *Weiss,* and is here represented (Fig. 147)." Cat. Obstet. Soc., 1866, p. 149. The instrument here preserved is not identical with "Fig. 147," as the cannula is fixed to the metal tube made for the attachment of the rubber tubing by a simple bayonet-joint, *and it bears the name of a different dealer.* In the figure in the Catalogue the joint is different. The cannula and the metal tube for the rubber tubing have rings (see No. 161). The outer surface of the trocar point is slightly angular; in later patterns it was made smooth.

This instrument was exhibited in 1866, the statement "the separate trocar is not required" (*vide suprà*) being worthy of note. It is transitional between No. 161 and No. 162, as the trocar is tubular but runs inside the cannula after the older type. In respect to the later development of the external trocar (See No. 162), Spencer Wells writes in 1872, "Diseases of the Ovaries," p. 336: "Last year, Dr. Fitch, of Portland, in the United States, showed me a modification of the instrument, which appears to be an improvement. Instead of the inner tube having a cutting point, which for protection is drawn into the outer tube or canula, as soon as the cyst has been perforated, Dr. Fitch made the outer tube cutting and protected it by pushing the inner tube forward." In 1887, Dr. Simon Fitch himself ("The Dome-Trocar and Associated Instruments in Paracentesis, Aspiration, Transfusion, Ovariotomy and Tunnelling the Enlarged Prostate," *Brit. Med. Journ.*, vol. i, 1887, p. 263) showed that "the happy thought of having the cannula itself pointed" was first conceived by Ferguson in 1853, who contrived the now familiar pen-like tubular needle, for injecting perchloride of iron into nævi and aneurysms. In 1858, Alexander Wood made use of these needles for syringes "for subcutaneous injections of morphine. Shortly afterwards, Sir Spencer Wells enlarged this little tubular trocar for ovarian tapping, and made the edges of the pointed end sharp for one half of the circumference of the tube." (See "Description of a Syphon Trochar (*sic*) for Ovariotomy and other purposes, by T. Spencer Wells," *Proc. Roy. Med. and Chir. Soc.*, vol. iv, 1861–64, and *Lancet,* vol. ii, 1862, p. 13.)

There was still a protecting cannula outside the puncturing tube, as in this sample, No. 163, and Fitch explains the disadvan-

tages of Wells's instrument. By 1866, as the instrument here preserved and the drawing in the Catalogue both witness, Spencer Wells was using a trocar and cannula combined in one tube, after the type of Ferguson's and Wood's injecting needles. Wells states in 1872 ("Diseases of the Ovaries," p. 336), that Fitch protected the outer cutting tube "by pushing the inner tube forward." Fitch, in the article above quoted, describes his trocar. He retained the inner tube, which bore a closed dome-like free end with a lateral orifice, and other modifications. This was "Fitch's Ovariotomy Trocar." His smaller "tapping trocar," of precisely the same mechanism, became very popular. Wells ultimately used, for many years, his tubular trocar with hooks and inside cannula (No. 162). *Royal Society of Medicine.*

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164. **Spencer Wells's Trocar and Cannula.**
(Early form of hooked handles.)

Length, with trocar point extruded ready for tapping 7 in. (17.7 cm.); diameter of cannula $\frac{5}{8}$ in. (1.5 cm.); the metal tube for attaching the rubber tubing is as in Nos. 160 and 161.

Trocar tubular and internal; hooks to seize cyst wall.

This instrument shows the earliest pattern of the spring handles with hooks (see Spencer Wells's note on their introduction, No. 162). It was found that the hooks, which are directed almost horizontally backwards, often failed to transfix the walls of the cyst around the puncture, simply pressing against them so that they slipped away or tore off from the hooks. The rings are retained as in No. 161. The inner tube is the trocar as in the older types, Nos. 160, 161, but it is hollow as in the final type (Nos. 162 and 163), not solid as in Nos. 160 and 161, or in a hydrocele trocar.

When the trocar had pierced the cyst wall, it was retracted by pulling on the metal rim. The ovarian fluid then ran along the outer tube or cannula, and down another tube fitted to it at right angles by a bayonet-joint. To this third metal tube the rubber tubing was applied, as in the oldest patterns.

Koeberle, in his "Opérations d'Ovariotome," 1865, p. 19, and Pl. 4, Fig. 1, states that Elser, an instrument maker at Strasburg, designed in or before 1861 an ovariotomy trocar and cannula with two hooks, either of which could be swung back into a sheath. Weiss, in his "Catalogue of Surgical Instruments, &c.," 1863, Pl. xxix, Fig. 23, represents "Spencer Wells's Hollow Trocar for Ovarian Tumours," of the type of No. 163, noting that "since the engraving of this trocar has been executed, we have, at the suggestion of Mr. Spencer Wells, added jointed spring hooks or clamps to it; these secure the cyst after the trocar has been introduced."

The Cat. Obstet. Soc., 1866, mentions (p. 149) "Mr. Chambers's Trocar and Cannula with a movable claw," which "differs from that of Spencer Wells, which has a claw on each side, but is *fixed*." Other operators modified the hooks.

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165. **Tapping Trocar and Cyst Elevator.**

12 in. (30.5 cm.) long; handle $3\frac{1}{2}$ in. (8.8 cm.); tube $\frac{1}{2}$ in. (1.2 cm.) diameter. "Mayer & Meltzer."

A straight metal tube ending in a stout trocar point. Immediately below the point is a piece of steel, 1 in. (2.5 cm.) long and forked at its lower and free end. It moves on a hinge uniting it above with the trocar, and when introduced into the cyst lies flat in a depression in the tube. When the trocar is plunged into the cyst, a steel button, placed on the tube immediately above the wooden handle is pulled downwards. This raises the piece of steel so that its free end, pointing backwards, catches the inner wall of the cyst close to the perforation made by the trocar, and assists in its extraction as the fluid contents of the cyst escape from the trocar wound.

The makers of this instrument state that a considerable number of trocars constructed so as to elevate the cyst wall after puncture were made in the years when Clay, Wells and Baker Brown were developing ovariotomy. The name of the designer of this instrument has not been preserved in its maker's records. A trocar with a somewhat similar contrivance was devised by Gaillard Thomas, and is figured in Emmet's "Principles and Practice of Gynæcology," 2nd ed., 1880, Fig. 125, p. 809. "It can be fixed within the sac by projecting out, like the ribs of an umbrella, a number of small arms or spurs, near the end of the cannula." Gaillard Thomas himself does not figure or mention this trocar in his "Practical Treatise on the Diseases of Women," 5th ed., 1881. Emmet used it before injecting iodine into an ovarian cyst.

Sir Francis Champneys, Bt., 1913.

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166. **Boeck's Ovarian Cyst Elevator.**

O. C. H.8g.

A safety pin $3\frac{1}{2}$ in. (8.8 cm.) long, the points fitting into a flat metal guard.

Described by the donor as an "Ovarian cyst elevator invented by Dr. Boeck of Missouri." It resembles Lawson Tait's pedicle-pin, also used as a cyst elevator. *Sir T. Spencer Wells, Bt.*

167. **Adams- Wells' Peritoneal Hook.**

Length $5\frac{7}{8}$ in. (14.7 cm.); stem 2 in. (5 cm.). "Evans & Co."

A slender, straight steel stem, ending in two minute teeth, about $^1/_5$ in. (0.5 cm.) long, bent sharply downwards under the stem, which is mounted on an octagonal wooden handle. According to Sir Spencer Wells' directions, when, in an ovariotomy, the median incision is made down to the serous membrane, and there is no free fluid in the peritoneal cavity, whilst the ovarian cyst is not fixed by adhesions, "it is necessary to divide the peritoneum very carefully or the cyst might be punctured and its contents discharged into the peritoneal cavity. The peritoneum should be raised with a hook or forceps, the sharp double hook of Mr. Adams answering the purpose perhaps better than any other instrument; and the membrane is then divided by one or two horizontal touches of the knife." This instrument is figured, with the above directions, in Wells' "Diseases of the Ovaries," 1872, p. 351.

W. Dunnett Spanton, Esq., 1914.

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168. **Volsella Forceps for Ovariotomy.**

Length 10 in. (25.4 cm.), from free end to lock 4 in. (10.16 cm.).
"Coxeter : London."

This forceps has bow handles and a screw block lock. For an inch (2.5 cm.) below their extremities the blades broaden out and at their free ends they are $\frac{1}{2}$ in. (1.2 cm.) wide and turn inwards with a convex free border downwards, the opposed surfaces being deeply cut diagonally in both directions forming elevations which come into accurate opposition with depressions on the other side.

Sir Spencer Wells, who presented this instrument as an "Old Volsella Forceps for Ovariotomy," found volsella forceps of different kinds necessary in drawing out a cyst or holding its walls open while breaking up solid matter and septa. He soon discarded this and other patterns for Nélaton's volsella, which is still in favour (1921).

The volsella now (1915) in vogue, and already used by Sir Spencer Wells himself in his later operations, has light shanks, ending with two teeth with the points turned inwards towards those of the opposite side. They are practically identical with the volsella which Fergusson used in tonsillotomy—see Fergusson, "System of Practical Surgery," Fig. 339, p. 519.

Sir T. Spencer Wells, Bt., 1878.

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169. **Spencer Wells's Pressure Forceps.**

(Old Form I.)

Weight $\frac{3}{4}$ oz. (21.5 grms.); length $4\frac{3}{4}$ in. (12.1 cm.); length of blades $\frac{3}{4}$ in. (2 cm.).

A heavy forceps considerably bevelled from its point to its joint, so as to be passed with facility amongst the tissues. The blades are short and broad, with U-shaped grooves along their whole length. The points of the blades are well-rounded. This construction of the blades was designed in order to make the grip of the nozzle as firm as possible. Box-joint, or male and female joint, with block on the blade side and also on the shank side of the male blade. The shanks are parallel, flat on the inner side, and convex outside; when closed they are separated by a space of quite $\frac{1}{4}$ in. (0.6 cm.). The handles, bows, or rings are convex on their inner surface and flat outside; they are fixed by a single Mathieu's catch. Owing to the heaviness of the forceps it maintains its pressure well, but it is difficult to release, and the box joint is not readily cleaned, and is liable, like the space between the shanks, to tear or grip the tissues.

This sample, once the property of Sir Spencer Wells, is one of the original stock first described in "Reports from the Metropolitan Hospitals on the Use of Torsion in Surgical Operations," *Brit. Med. Journal,* Vol. i, 1874, p. 47, with drawing. It was made for Wells early in 1872 by Krohne and Sesemann ("Remarks on Forcipressure," *Brit. Med. Journal,* Vol. i, 1879, p. 926. In pattern it strongly resembles a "Sims' forceps for holding a needle or twisting wire," illustrated in Weiss's "Illustrated Catalogue of Surgical Instruments," 1863, Pl. 29, Fig. 10—a larger instrument, $7\frac{1}{2}$ in. (19 cm.) long.

(NOTE.—*Development of the Pressure Forceps.* In 1853 Webber invented his anti-ligature forceps. Spencer Wells used what he called "bull-dog forceps" (Liston's *not* Dieffenbach's) in all his earlier ovariotomies. In 1858, Charrière added a catch on the shanks just above the rings to his scissor-handled dressing forceps. In 1862 Koeberle applied Charrière's forceps to a bleeding ovarian artery; it came away spontaneously on the sixth day. In 1865, Verneuil secured the bleeding stump of a uterine polypus by leaving a polypus forceps attached to it for two days. In December 1865, Elser (see No. 164) constructed Koeberle's *pince hémostatique*; after October 1867, that surgeon removed the forceps at the end of the operation, instead of leaving it on the vessel for a day or longer. In 1866 Guéride constructed for Péan an instrument for forcipressure, modification, like Koeberle's, of Charrière's, with Charrière's lock[1] (see note to No. 50, Pajot's forceps). In 1872, Spencer Wells first employed this pressure forceps[2] after testing several designs, including this sample, and in 1878 he adopted the later form with superimposed blades, No. 172).

For full references to the writings of Koeberlé, Péan, Spencer

Wells, etc., see an article by the donor, "The Development of the Pressure Forceps," *Brit. Med. Journ.*, Vol. i, 1915, p. 555.

Alban Doran, Esq., 1913.

1. Makers and dealers considered that Péan's instrument was Wood's forceps with Charrière's lock.

2. Believed by instrument makers to be a modification of Sabine's forceps.

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170. **Spencer Wells's Pressure Forceps.**

(*Old Form II.*)

Weight $1\frac{1}{4}$ oz. (35 grms.); length $5\frac{1}{8}$ in. (13 cm.); length of blades 1 in. 2.5 cm.). "Krohne & Co., London."

This instrument has all the characters of No. 169, except that it is larger. It has also all the defects of the smaller forceps, being heavy and hard to unfasten, whilst the box joint and the wide space between the shanks are objectionable. It has the power of exercising very firm pressure, ensuring hæmostasis; but sufficient pressure can be obtained by the lighter instrument which superseded it and is now known as Wells's forceps (172).

Messrs. Krohne and Sesemann, 1914.

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171. **Spencer Wells's Pressure Forceps.**

(*Intermediate Type.*)

This instrument weighs a little under $\frac{3}{4}$ oz. (21.5 grms.); length 5 in. (12.7 cm.); of blades 1 in. (2.5 cm.). "Hawksley, London."

The blades are narrow and fairly long, with U-shaped grooves traversing their entire length. The grooves in this sample, when presented, showed signs of having been tested on leather to ascertain their maximum compressive power (Spencer Wells, "Ovarian and Uterine Tumours," 1882, p. 283). The lock is a block screw joint, *i.e.*, it bears a block both on the blade and the shank side; compare No. 172. The whole instrument is bevelled on its outer surface. The shanks are rounded both on the outer and the inner side, and when closed lie almost parallel to each other, separated by a space of $\frac{1}{8}$ in. (0.3 cm.). The handles are large, $1\frac{1}{4}$ in. (3.17 cm.) by 1 in. (2.5 cm.) in diameter and "shaped," they bear a single Mathieu's catch. The shanks, being light and well rounded, have the action of a spring when the catch is closed.

An intermediate type of lighter construction than the earlier forms, yet with quite sufficient power, and with a screw-lock instead of a box-lock. The shanks, however, run parallel not being superimposed as in Hawksley's later modification, generally known as "Wells' forceps" (No. 172). *Alban Doran, Esq.*, 1914.

172. **Spencer Wells's Pressure Forceps.**

(Mosquito Pattern.)

Weight $\frac{1}{2}$ oz. (14 grms.); length $4\frac{3}{4}$ in. (12.1 cm.); length of blades $\frac{3}{4}$ in. (2 cm.). "Krohne, London."

This small, light forceps is made after Spencer Wells's latter pattern, still in use; in this sample the teeth are reduced to deep oblique grooves, as in an ovarian pedicle forceps. Screw joint with block on the blade side only (see No. 171). Shanks superimposed and fixed with a double Mathieu's catch. Handles "shaped," and one, thinner than the other, is notched, the object of which is not apparent. Though so light, this forceps possesses high compressive power.

An early model of the forceps, designed by Hawksley for Spencer Wells in 1878. As the space between the shanks in the forceps first described in 1874 (No. 169) involved danger, the blades were made so as to be superimposed. See "On Ovarian and Uterine Tumours," 1882, p. 283. Later on Spencer Wells had similar forceps made stouter in construction, and numerous modifications were devised by Bryant, Lawson Tait, Greig Smith and others. *Messrs. Krohne and Sesemann,* 1914.

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173. **Hutchinson's Calliper-Clamp.**

This instrument appears to be an ordinary calliper, measuring $3\frac{5}{8}$ in. (9.2 cm.) in a straight line from the tips of the limbs to the free end of the joint. The limbs are to be pressed across each other around the pedicle.

"The clamp first introduced by Mr. Hutchinson was the carpenter's common calliper. His first improvement was to make the handles moveable." Sir T. Spencer Wells, "Diseases of the Ovaries," 2nd ed., 1872, p. 337. See notes on No. 174, the Wells-Hutchinson Clamp. *Royal Society of Medicine.*

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174. **Wells-Hutchinson Clamp.**

Two stout steel bars,, slightly curved, $3\frac{1}{2}$ in. (8.8 cm.) long, each bearing a longitudinal slot or fenestra $2\frac{1}{2}$ in. (6.35 cm.) in length.

The bars are united by a hinge joint at one end and can be opened or closed at the other by a screw which is attached to one bar by a hinge joint. The blades being opened, the pedicle is placed between them. Then the screw is slipped into a notch at the end of the bar above it, and made fast by a travelling thumb-piece. The screw at the opposite end, where the bars unite, can also be made as firm as desired. The bars should be placed with their concavity next to the abdominal wound, the screws pointing upwards. Their inner surfaces are roughened so that the pedicle may be more securely held.

In the Cat. Obstet. Soc., Lond., 1866, this identical instrument is figured, p. 143, Fig. 139, under the following letterpress: "*Hutchinson's Clamp,* exhibited by *Ferguson,* is here represented." Nothing more is stated about it. Three years *earlier* it is represented in Weiss' Catal., 1863, Pl. xxii, Fig. 1, as Spencer Wells's Original Clamp for Ovariotomy. In Sir Spencer Wells' "Diseases of the Ovaries," 2nd ed., 1872, p. 337, the author continues, after his note about Hutchinson's calliper clamp (see No. 173): "My first attempt to improve upon that instrument resulted in the manufacture of two fenestrated blades, which were made to exert parallel compression by a screw at each end. This instrument is still (1872) described as my clamp, and the original sketch of it here given has been copied by Simpson and other writers." The "original sketch" represents an instrument very similar to this sample, save that the blades are straight and the two screws bear a milled screw-head instead of thumb-pieces. Another drawing is added; it "was published in 1858. It shows the first attempt at a parallel clamp before I added a screw at each end."

Wells first used this "first attempt" in his third ovariotomy ("Diseases of the Ovaries," 1st ed., 1865, p. 8), November 1st, 1858. The pedicle "was secured between the blades of a metal clamp." For Wells's further experience with this clamp, see *loc. cit.,* 1872 edition, p. 338. He states that "the straight instrument lying awkwardly after application, and sometimes causing painful pressure at its angles, I had it curved and all the edges carefully rounded off." In this sample the bars are curved, but the edges are not rounded off.

Whether Hutchinson or Spencer Wells first used this instrument it is really a copy of Halm's bowel clamp. Hutchinson, it appears, soon discarded it for a more satisfactory instrument.

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175. **Ovariotomy Clamp of the Hæmorrhoid Type.**

Old Cat. H. 8.g.

A German silver calliper clamp with blades 5 in. (12.7 cm.) long by $\frac{5}{8}$ in. (1.5 cm.) wide, concave on their upper surface and convex on the lower surface. The under limb bears five slots and the upper once bore five pegs, which are missing, the corresponding holes representing their position. The convex surface of the instrument was applied to the ovarian pedicle, or to a hæmorrhoid, as the case might be. The blades were pressed together as much as desired, the pegs locking them, after the fashion of a collar stud.

Sir T. Spencer Wells, 1878.

176. **"J. Hutchinson's Original Clamp."**
Old. Cat. H. 8.f.

This instrument was so named by Sir Spencer Wells when he presented it with the remaining instruments in the clamp series.
"W. Mathews, Portugal Street, London."

This clamp, not removable from its shanks, is 8 in. (20.3 cm.) long; 3 in. (7.6 cm.) for the clamp part and 5 in. (12.7 cm.) for the shanks, one of which ends in a hook, the other in a ring. The limbs are united by a screw-joint at their free ends; they are perfectly straight, four-sided, and very thick—about $\frac{3}{8}$ in. (1 cm.) wide and deep. Their inner or crushing surface is chequered. A curved steel bar fixed to the inner side of one limb at the base of the clamp passes through the other which bears a screw to fix it.
See note to No. 173. *Sir T. Spencer Wells, Bt.*, 1878.

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177. **"Hutchinson's Clamp: Old Form."**
Old Cat. H. 8.i.

So named by the donor. "Straube" on one handle; "Weiss: London," on the other.

This is a short stout clamp with handles (see note to No. 173) made to fit into the bases of its limbs. A curved steel bar with holes passes from one limb through the other, and may be fixed by a thumb-screw, after the clamp has been pressed against the ovarian pedicle by the handles, which are then detached. See note to No. 180. One limb of the clamp is jointed to its fellow at the free end as in Wells's clamp, No. 180. A similar instrument is figured in Fergusson's "System of Practical Surgery," 5th ed., 1870, Fig. 404, p. 627. "The instrument now generally in the hands of ovariotomists is one of the modifications, for the application of which to ovariotomy we are indebted to Mr. S. Wells."
Sir T. Spencer Wells, Bt., 1878.

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178. **Spencer Wells's Circular Clamp.**
Old Cat. H. 8.h.

So named by the donor. "Mayer, Meltzer, London."

A short and very stout calliper, affixed by its upper surface to a pair of handles (8 in. (20.3 cm.) long, with a French lock (thumb-screw fitting into a mortice). At its free end the limbs of the calliper bear a rack and screw. The calliper was applied, wide open, to the pedicle, closed upon it by pressure on the handles, and fixed by the screw.
Sir T. Spencer Wells, Bt., 1878.

179. **Spencer Wells's Ovariotomy Clamp (I).**

Old Cat. H. 8.r. (b).

This is an old form of the small clamp (No. 180) which was fixed on the pedicle with the aid of pliers, an instrument always associated with the name of Sir Spencer Wells. It consists of two metal bars $2\frac{3}{4}$ in. (7 cm.) long, one bearing on its inner surface two pieces of metal $1\frac{1}{2}$ in. (3.8 cm.) long which run obliquely upwards and fit into slots in the opposite bar, where the lower piece can be fixed by a screw bearing a thumb-piece. Each bar has a depression at the lower end to fit the pliers. The bars slide along the oblique metal pieces so that the whole forms a rhomboid. Oblique furrows, suggested by Küchenmeister (see No. 180) and retained in later patterns, are present on the inner side of each bar, the outer side of which is well rounded. Wells noted, in speaking of parallel clamps, that a pedicle not subjected to circular constriction would be so elongated from side to side as to prevent closure of the wound ("Diseases of the Ovaries," 2nd ed., 1872, p. 337). This clamp, pressing entirely in one direction, was replaced by No. 180.

"This instrument was amongst the forceps and clamps used by the late Sir Spencer Wells in his earlier ovariotomies."

Sir Arthur Wells, Bt., 1897.

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180. **Spencer Wells's Ovariotomy Clamp (II).**

Old Cat. H. 8.r. (a).

Described by the donor as "used by the late Sir Spencer Wells in his earlier ovariotomies."

This is the clamp always associated with the name of Wells. It consists of two very stout limbs, nearly 3 in. (7.6 cm.) long. One limb fits into a groove in a projection from the upper end of its fellow. Near the lower end they are united by a curved flat bar of steel, deeply grooved on each surface. This bar is fixed to the inner side of each limb and passes through a slot in the opposite limb which bears a thumb-screw to fix it when their limbs are closed, to the greatest possible degree, on the pedicle. Each limb bears a depression at its lower end to fit the incurved end of the pliers or forceps used to fix the clamp on to the pedicle. "Various modes of fixing movable handles were tried, and none proving very satisfactory, I substituted a long pair of forceps for the handles, so made that it would fit clamps of all sizes, and one pair of forceps serve for any number of clamps." (Spencer Wells, "Diseases of the Ovaries," ed. 1872, p. 338.) After trying modifications of the compressing surfaces of the clamp, "I found the most trustworthy was that suggested by Küchenmeister of Dresden

where oblique ridge and furrow on one blade exactly meet the corresponding elevations and depressions on the other. If properly made, these surfaces, when pressed together, will not allow a piece of fine tissue-paper to be drawn between them" (*ib.*). This arrangement is seen in this instrument. "Additional thickness was given," the donor adds, "to that part of the blade in which the screw passes through to the arc."

This was the pattern which Spencer Wells employed until he discarded the clamp, late in his professional career.

Sir Arthur Wells, Bt., 1897.

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181. **Pliers or Forceps for Spencer Wells's Clamps.**

Old Cat. H. 8.r (c).

Powerful pliers $7\frac{1}{2}$ in. (19 cm.), 2 in. (5 cm.) from free end to lock. The incurved two-toothed free end of each blade is made to fit into the corresponding depression in the clamp, which can then be pinched as tightly on to the pedicle as desired, and finally made fast by the screw.

"Various modes of fixing movable handles were tried (see No. 177), and none proving very satisfactory, I substituted a large pair of forceps for the handles, so made that it would fit clamps of all sizes and one pair of forceps serve for any number of clamps. (Spencer Wells, "Diseases of the Ovaries," 1872, p. 338.)

Sir T. Spencer Wells, Bt., 1878.

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182. **Old Ovariotomy Clamp for temporarily securing Pedicle.**

Old Cat. H. 8.m.

So named by the donor. "Weiss, London."

A powerful instrument $10\frac{1}{2}$ in. (26.6 cm.) long, scissor lock with block both on blade and on handle sides and handles with scissor rings. The blades are 5 in. (12.7 cm.) long, straight, stout and marked on their inner sides (which bear two parallel rows of short spikes) with deep transverse grooves. The clamp was made fast by the travelling thumb-piece on the screw fixed to the inner side of one handle and passing through the other.

Sir T. Spencer Wells, Bt., 1872.

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183. **Clay's Adhesion Clamp.**

Old Cat. H. 8.c.

The original instrument devised by Clay of Birmingham. It was not intended for application to the pedicle, but to stop bleeding from detached omentum, etc. (See note to No. 185, Baker Brown's

clamp.) This clamp consists of two straight steel bars, $9\frac{3}{4}$ in. (24.7 cm.) long, their lower part or handle being lined with wood outside. At their extremities one bar fits into the other by a tenon and mortise joint, whence it can be detached. A screw fixed to the inner side of one bar near the handle traverses the other bar, and is regulated by a travelling thumb-piece. The inner surface of the bars is rough. In a drawing in the Cat. Obstet. Soc., 1866, p. 146, Fig. 142, this clamp is represented without any screw.

Sir T. Spencer Wells, Bt., 1878.

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184. **"Old Form of Cautery Clamp.."**
Old Cat. H. 8.1.

" Matthews."

So described in notes sent by the donor. It bears a considerable resemblance to some of H. Smith's earlier hæmorrhoidal clamps, and has the same screw apparatus, with a spring as well, between the shanks of the handles, but the cautery blades are long, smooth and narrow, without any screw or guard of any kind. On the inner surface of one blade is a longitudinal ridge of roughened metal which fits into a longitudinal groove in the same part of the opposite blade.

This instrument was apparently used, like Clay's, simply for checking hæmorrhage from detached adhesions, omentum, etc., and not for application to the ovarian pedicle after the practice of Baker Brown. *Sir T. Spencer Wells, Bt.*, 1878.

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185. **Baker Brown's Ovariotomy Cautery Clamp.**
Old Cat. H. 8.a.

While the original ovariotomy clamp (No. 183) was devised by Clay of Birmingham, simply in order to stop bleeding from vessels in adherent omentum and other adhesions when separated from the cyst wall, " Mr. Baker Brown was the first to apply it to the pedicle. He improved the instrument by making it broader, by adding a guard to prevent slipping of the cautery, and an ivory shield to protect the soft parts from the action of the heated clamp. His results were so successful that I tried the method; and, after a case or two, curved the handles, altered the joint, substituted a better non-conductor for ivory, and used the galvanic and the gas-cautery, instead of the common irons." (Spencer Wells, "Diseases of the Ovaries," 1872, p. 340.)

In Cat. Obstet. Soc., 1866, p. 145, Fig. 141, an earlier type of Baker Brown's clamp is represented, with a simple detachable

joint, uniting the free ends of the blades. In this sample the joint resembles that of Wells's ovariotomy clamp (No. 180). The modification was designed to make the blades as nearly parallel as possible (see No. 187).

Sir T. Spencer Wells, Bt., 1878.

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186. **Cautery Iron for Baker Brown's Clamp.**

"The cauterising irons used by Mr. Baker Brown were the ordinary conical irons, with a sharp edge, used in firing joints. With these instruments made red hot in the fire he divided the pedicle (the manœuvre is demonstrated by an illustration); the tumour being held up by an assistant. This was a tedious and troublesome process; and I found that the same end was attained by cutting away the cyst half-an-inch or so from the clamp, and then burning away all the tissue that projected beyond the surface of the clamp" (T. Spencer Wells, "Diseases of the Ovaries," 1872, p. 340). This sample has been much used; its wooden handle is charred.

Sir T. Spencer Wells, Bt., 1878.

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187. **Baker Brown's Modified Ovariotomy Clamp.**

Old Cat. H. 8.

"Coxeter, London."

A modification of the original instrument (No. 185), designed to secure perfect parallelism of the blades.

One blade terminates in an ordinary screw-joint, the other in a right-angled rod at the end of which is a joint with a fixed pin. To the screw-joint of the opposite blade a bar is fixed at right angles, ending in a U-shaped joint into which the joint with a fixed pin on the other blade is fitted. This bar has on its surface a bearing with a female screw, a rod with a male screw and square head passing through it. By turning a key which fits on to this head, the base of the screw rod presses on a bearing, which is fixed to the surface of the blade itself, thus producing a parallel action of the blade. The means to attain that end is somewhat complicated. It was effected in a much simpler way in Henry Smith and Sydney Jones' hæmorrhoidal clamps.

The handle bears a screw rack close to the blades, which, as in Baker Brown's original cautery clamp, are coated with ivory. There is a sliding metal shield on the opposite side of one blade, with two slots fitting into corresponding pin-heads on the blade.

Donor Unknown.

188. **Dr. Wright's Cautery Clamp.**

Old Cat. H. 8.D.

"Coxeter."

The donor described this as "Dr. Wright's Cautery Clamp. By the screw arrangement different parts of the clamp can be opened separately to ascertain if there is hæmorrhage. The key to the screw is put by the side of the specimen." Made by Coxeter. There are seven metal segments on one blade, each one inch (2.5 cm.) broad, and furnished with a square head for the key. They can be screwed down on to the pedicle, or up into the hollow blade. There is a number marked on each screw head and on its corresponding segment. A screw rack has been fitted on to the blades, both at the shanks and at the free end, in order to make uniform pressure yet more sure. The blade with the movable segments bears a guard, but no ivory or protecting coating. There is a screw and travelling thumb-piece at both ends of the clamp. This instrument is even more complicated in its mechanism than No. 187.

Dr. Wright was a colleague of the donor, being physician to the Samaritan Free Hospital from 1858 to 1868.

Sir T. Spencer Wells, Bt., 1878.

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189. **Ovariotomy Cautery Clamp after Kocher.**

Weight 14 oz. (397 grms.); length of blades $3\frac{3}{8}$ in. (9.2 cm.); length of handle to joint $6\frac{1}{2}$ in. (16.5 cm.).

"Matthews: Portugal Street, London."

This is a modification of Kocher's well-known bowel-clamp forceps, constructed at Spencer Wells's suggestion by Matthews, who once had a high reputation as a maker of intestinal instruments. There is a long pair of handles with a screw-joint, the handles curve outwards above the joint, and then turn inwards to their attachment outside the blades which are perfectly straight. One blade bears an elevated notched ridge made to fit into a deep groove on the opposite blade which bears finer notches on either side of the groove. The handles bear a screw rack (Kocher's bowel-clamp bears a spring-rack). In order to facilitate removal of the finger, one handle ends in a loop instead of a ring.

It would serve as a cautery clamp or a plain clamp for the ovarian pedicle, for wide, broad adhesions or for omentum. In Kocher's bowel clamp the straight blades revolve; in this instrument they are fixed, being more convenient for ovariotomy purposes. Wells, however, seldom used and soon discarded it. He presented it in 1878 to the Obstetrical Society of London.

Royal Society of Medicine.

190. **Lazarewitch's Parallel Cautery Clamp.**

"Grünblatt, Charkoff."

A very heavy clamp, weight 18 oz. (511 grms.); solid steel $8\frac{3}{4}$ in. (22.2 cm.) long, each blade $\frac{7}{8}$ in. (2.2 cm.) wide; ebony handles $3\frac{1}{2}$ in. (8.8 cm.) long, with prominent grooved, flattened sides to enable them to be more easily approximated. The left blade terminates in an oval-shaped end, at right angles to its stem, being hollowed out with a pin passing through after the form of the letter H. Along the upper surface of this blade is a fixed shield or guard for the cautery. There is a pivot $\frac{3}{4}$ in. (2 cm.) above the handle, upon which revolves a steel rod 2 in. (5 cm.) long. At the upper end of the rod and at right angles to it, is a revolving shoulder bearing a female screw, through which passes a screw rod 2 in. (5 cm.) long with a fixed thumb-piece. Immediately below the pivot is a steel block, 2 in. (5 cm.) long by $\frac{5}{8}$ in. (1.5 cm.) wide, at right angles to the shank, and passing through a slot in the right or opposite blade, thus forming a guide for the right blade to travel upon. The right blade ends in an oval end-piece at right angles, having a U-shaped end which fits on to the pin or axis of the H-shaped end of the left blade. Half an inch (1.27 cm.) above the ebony handle, a slot is cut into the shank to allow the steel block of the left blade to travel through. At the side of the slot is a depression. The screw rod, worked by the thumb-piece, is pressed into this depression after the clamp has been adjusted to the pedicle, to keep the blades parallel. A thumb-screw presses through the handles close above their lower free end to ensure the parallelism of the blades. The under surfaces of the blades are slightly convex and have no ivory guard.

Granting that, as was believed, absolute parallelism is necessary when the clamp is pressed on the pedicle, so that no part of its raw surface after section can slip before the cautery is applied, Lazarewitch's instrument is sound and well thought-out in its mechanism. The blades are to be opened and applied to the pedicle, as usual, then parallel pressure is ensured by adjusting the screw on the shank, and afterwards the screw at the end of the handles. *Royal Society of Medicine.*

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191. **Masslowsky's Talc Guard for Ovarian Cautery Clamp.**

Old Cat. H. 8.P.

A piece of talc, irregularly four-sided,—about 3 in. (7.6 cm.) by 4 in. (10.16 cm.), and $\frac{1}{4}$ in. (0.6 cm.) thick.

The donor described it as "Talc used by Masslowsky during the use of the cautery clamp."

Sir T. Spencer Wells, Bart., 1878.

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192. **Wells's Wire Ecraseur for the Ovarian Pedicle.**
Old Cat. H. 8.O.

Six in. (15.24 cm.) long; bar to guard integuments of abdomen 3 in. (7.6 cm.) long, $\frac{1}{2}$ in. (1.2 cm.) wide. Handle $1\frac{1}{2}$ in. (3.8 cm.) broad. "Weiss, London."

An old-fashioned wire ecraseur of the usual type, but there is no cross-bar above the handle for the left hand, to allow the stem to be held steady, while, on the other hand, a broad steel bar, slightly concave upwards, is attached to the stem under its free end to protect the abdominal wall close to the wound.

Spencer Wells, early in his experience, tried both the chain and the wire ecraseur, and soon abondoned them. See "Diseases of the Ovaries: their Diagnosis and Treatment," 2nd edition, 1872, p. 341. *Sir T. Spencer Wells, Bart.*, 1878.

192A. **Ovariotomy Serre-Noeud.**
(*After Cintrat.*)

Length 4 in. (10.16 cm.); weight a little over $\frac{1}{4}$ oz., or 7 grms.

Made of German silver. A screw rod, turned by a thumb-piece, is fitted on a frame; the rod ends in a hollow head-piece. A travelling female screw-mount runs along the screw rod, a screw button on its under side sliding in a longitudinal slot in the frame parallel to the screw-rod. This travelling screw bears a knob, so that a wire can be looped on and the free end wound round it. The head-piece is open at the end and bears an oval slit on its upper surface. The loop on one end of the wire being pushed over the knob, the wire was introduced into the oval slit, passed out of the opening at the free end of the head-piece, brought round the pedicle of the ovarian tumour, and then brought backwards through the opening and the slot, the free end being made fast to the knob. By turning the thumb-piece, the wire can be made as tight as desired. There was no wire on this inestrument when presented.

A modification of Cintrat's *serre-noeud*. It was not satisfactory, being too long, and the metal of the head-piece was apt to cut into the tissues of the pedicle. Many modifications were made in order to satisfy the views of the earlier ovariotomists and general surgeons who operated until extra-peritoneal treatment of the pedicle was discarded. *John Croft, Esq.*, 1902.

193. **Marion Sims' Guarded Tumour Hook (I).**

Length 13 in. (33 cm.), the metal part fitted to the handle being 8 in. (20.3 cm.), not measured along the curve.

"Krohne & Co."

The essential part is a steel bar which makes a wide curve and ends in a kind of crotchet, $\frac{3}{4}$ in. (1.9 cm.) broad at the bend, bearing five sharp teeth $\frac{1}{4}$ in. (0.6 cm.) long, bent downwards. It is fitted on to an ebony four-sided handle. A thinner steel bar is made to slide along the concavity of the stouter one; it bears a guard, a pyramidal piece of ebony, which fits into the concavity of the crotchet, so that the instrument can be safely packed, or introduced into the vagina. At the lower end of the thinner bar is a finger-ring which, when pulled down along the front of the wooden handle, draws down the guard to the desired distance, then the bar is fixed by a small screw immediately above the handle. A long slot in the thin bar allows of its movement up or down when the screw is loosened.

This instrument, with the bars straight and with a two-toothed volsella-like hook at the end, is figured in J. Marion Sims' "On Intra-Uterine Fibroids," *New York Medical Journal,* Vol. xix, 1874, p. 337. Sims, after dilating the cervix, pulled down the presenting part of the fibroid with a big volsella, opened the capsule by a semilunar incision, and freed the tumour as much as possible by passing his enucleator (No. 195) between it and the capsule. Then this tumour hook was passed up along the posterior surface of the tumour and hooked deeply into its substance, thus giving strong leverage for evulsion. The guard was then pushed up and the screw made fast, and the operator, holding the volsella firmly, completed the enucleation. Sims admits (*loc. cit.,* Case ii, p. 342, that this instrument was not always of high value if the tumour were large and could not be drawn through the intact cervix.

Penrose Williams, Esq., 1912.

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194. **Marion Sims' Guarded Tumour Hook (II).**

Length $10\frac{3}{4}$ in. (27.3 cm.), the metal part being $6\frac{1}{2}$ in. (16.5 cm.), not measured along the curve.

In this sample the wooden guard has been drawn down, leaving the hook or crotchet bare. *Penrose Williams, Esq.,* 1912.

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195. **Marion Sims' Enucleating Hook.**

Length 10 in. (25.4 cm.), of which the metal part measures $4\frac{1}{2}$ in. (11.4 cm.).

A straight steel bar mounted on a long hexagonal smooth wooden handle. At its free end it forms a small hook, shaped like

a note of interrogation, thick on its outer and sharp on its inner and convex border.

This instrument, designed for tearing down adhesions between a fibro-myoma of the uterus and its capsule, was much used by Sims, and he more than once altered its form. One variety was fifteen inches (over 38 cm.) long and curved, it ended in a loop; another, also very long, terminated in a blunt hook bent at right angles to the shaft. See "On Intra-Uterine Fibroids," *New York Med. Journ.*, April 1874. This instrument was of later design.

Royal Society of Medicine.

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196. **Uterine Enucleating Hook with Guard.**

Length 14 in. (35.6 cm.), of which the metal part measures $9\frac{3}{4}$ in. (24.7 cm.).

A long straight steel bar mounted on a quadrangular wooden handle, roughened. There is a hook, as in the previous instrument, but larger, thinner, and concavo-convex. Its free end can be guarded by a piece of metal made so that it may be slid along the bar or stem. *Penrose Williams, Esq.*, 1912.

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197. **Koeberle's Serre-Noeud.**
(*Bantock's modification.*)

Length $4\frac{3}{4}$ in. (12.1 cm.), key and wings both 2 in. (5 cm.) broad.

"Krohne and Co., London."

This serre-noeud is a delta-metal cylinder (once lacquered) hollowed to allow a long screw to revolve within it. At its upper end it is flattened and bridged for the passage of a loop of wire, its extremity is $\frac{1}{2}$ in. (1.2 cm.), broad, blunt, and carefully finished lest it should bruise or cut into the uterine pedicle. A key or handle fits on to the lower end of the screw. A button, with a short shank, constructed so that it moves along the thread of the screw, slides along a slit on the upper surface of the cylinder. Bantock lengthened the cylinder and added wings, which steadied the instrument when the wire was being tightened. A loop of soft flexible iron wire, about a foot (30.5 cm.) long, has been fastened on to the button, and passed under the bridge. When in use, the wire was brought over the pedicle and back under the bridge, its end being twisted, as here shown, round the shank of the button. The pliers or nippers, here preserved (198), were used to pull the loop tight, before coiling it round the button. Lastly, the wire was drawn as tight as desired by means of the key. Pins being passed across the pedicle on the distal side of the wire, the uterus was amputated. The wire was tightened from time to time until the pedicle came away.

This instrument was originally used by Professor Koeberle as an ovariotomy clamp. He figured it in his work, "De l'hémostase définitive par compression excessive," 1877, fig. 26, representing the drawing in his article "Des maladies des ovaires et de l'ovariotomie," *Nouveau dictionnaire de médecine et de chirurgie pratiques,* 1878, fig. 137, p. 580, "Constricteur serre-noeud de Koeberlé." In his "Manuel opératoire de l'ovariotomie," 1870, he states that he had already taken to the serre-noeud (which, however, he does not figure) to the almost total exclusion of the clamp.

This serre-noeud proved more useful in supra-vaginal hysterectomy, and was widely employed between 1880 and 1895, when the pedicle, generally the stump of the uterus itself, was fixed in the lower angle of the abdominal incision. It was especially suited to Porro's Cæsarean hysterectomy. *Alban Doran, Esq.*, 1914.

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198. **Pliers for use with Koerberle's Serre-Noeud.**

A powerful instrument 5 in. (12.7 cm.) long, blades 1 in. (2.5 cm.) long, roughened on their inner surface near the point, to hold the wire, sharpened lower down so as to cut it. Box lock-joint, handles bowed outwards. *Alban Doran, Esq.*, 1914.

Dr. William Hunter's Uterine Polypus Snare, employed by John Hunter for passing ligatures in the treatment of aneurysm, is placed in the group Hunterian Relics, No. 6.

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199. **Beaumont's Polypus Snare (I).**

Two rods or rami 13 in. (33 cm.) long. This instrument is made entirely of steel. "Ferguson."

W. Beaumont writes: "The instrument for tying uterine polypi consists, among other parts, of two rami parallel to each other, save that one is slightly curved towards its point, so as to correspond in some measure with the posterior parietes of the vagina, between the rami, which parts of the instrument are temporarily joined together at the handle, the distance between them being capable of increase or diminution according to the size of the polypus to be tied. The curved ramus is solely for the purpose of aiding in the placing of the noose around the pedicle of the polypus, and may be removed from the rest of the instrument and from the vagina when that is accomplished. The straight ramus, besides assisting in the application of the ligature, is also, with other parts, attached to it, the means by which the noose is tightened, and rendered unyielding. This instrument is perhaps somewhat complex, but it must be borne in mind that it is to accomplish a complex purpose. It is first to carry a noose around the pedicle of

a tumour in a narrow passage; it is then to constrict the pedicle so far as to strangulate the tumour; and, lastly, to join the running end of the noose in the knot, so as to prevent any elasticity of the pedicle from enlarging the noose." "An account of some new Instruments for tying Polypi of the Uterus," etc. By William Beaumont, London, 1838, p. 1.

This instrument is fitted with a double rack arrangement to control the movement of the silk. Its mechanism is minutely described, with the aid of drawings, in Beaumont's "Account," and the method of application of the noose around the pedicle of the polypus explained at full length (*loc. cit.*, pp. 11–13). It was presented to the Museum of the Obstetrical Society as "Ferguson's Porte lacs," but it bears no resemblance to any type of the obstetrical instrument bearing that name, and is identical with the polypus snare described and figured by Beaumont who states that one of the makers was Ferguson. The donor is unknown. For further observations on the mechanism of this polypus snare, see "Beaumont's Snare, III" (201).

The inventor was William Rawlins Beaumont (1803—1875), who afterwards, in 1841, emigrated to Toronto and designed an instrument (D. 34, in this collection) for operations on cleft palate, which it is believed suggested the mechanism of the sewing machine. (See Obituary, *Brit. Med. Journ.*, vol. ii, 1875, p. 749). He also invented the complicated speculum, preserved in this collection (No. 270), bearing his name.

Royal Society of Medicine.

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200. **Beaumont's Polypus Snare (II).**

A similar instrument, the rods or rami are made of steel, the remainder of brass. The double rack arrangement is identical. It was presented to the Museum of the Royal College of Surgeons by the inventor. *William Beaumont, Esq.*

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201. **Beaumont's Polypus Snare (III).**

A larger instrument than I and II. The two rami or rods are each about 15 in. (38.1 cm.) long. As in II, they are made of steel, whilst the remainder is in brass. The snare was presented to the Museum of the College of Surgeons by the inventor, but it differs in mechanism from I and II. No note of this modification is to be found in Beaumont's treatise on this snare where the original is figured and described.

This modified instrument bears, like the earlier type two steel rami or rods. One is straight and carries the silk which is passed through two holes in the free end to make a loop. The ends of the

loop are fixed to a pulley on the upper surface of the rod 10 in. (25.4 cm.) from the free end and to a cleat or catch on the side of the rod about 2 in. (5 cm.) nearer the end. By turning a screw which projects from the under surface of the lower extremity of the rod, the small brass block just below the pulley is drawn upon. There is a bigger block, cubical, partly brass and partly bone, and a spring projects underneath it. By drawing down that spring towards the straight brass block immediately below the big cubical block, the straight rod can be revolved.

The other ramus or rod is bent near its free end. It is a suture-catcher. A smaller rod 7 in. (17.7 cm.) long slides on its under surface, ending below in a catch and above in a needle. The loop of silk at the end of the straight rod is pressed into a notch at the end of the bent rod, then the catch is forced upwards till the needle is pushed into a hole at the end of the bent rod and the loop is held in the notch.

A flat brass bar 3 in. (7.6 cm.) long and under $\frac{1}{2}$ in. (1.25 cm.) wide, connects the lower ends of the two rods. The bent rod can travel along this brass bar, and when it is brought to the required distance from the straight rod it is fixed by a screw projecting from its lower extremity.

The mechanism of this polypus snare, with its pulleys and cleats, is nautical. The whole is an unnecessarily complicated arrangement to attain results more simply obtained by an instrument like Gooch's cannula. The screws projecting from the lower ends of the two rami or rods are out of order.

(In the Atlas to "The Principles and Practice of Obstetric Medicine," 1836, David Davis, Pl. xx.B, and xx.C, figures an instrument, "the principle of which was first suggested by Desault" for strangulating pedunculated tumours. As in Beaumont's snare, "one ramus is solely for the purpose of placing the noose around the pedicle," and is to be removed when that is accomplished." By 1840 Sir J. Y. Simpson ("On the Detection and Treatment of Intra-Uterine Polypi") taught that the immediate division of the pedicle was the right method; hence an American ecrasieur which cut through the pedicle was superior to Gooch's and Davis' contrivances. "Leaving a rough instrument within the cavity of the uterus" was objectionable.)

William Beaumont, Esq.

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202. **Gooch's Cannula.**

The inventor, Dr. Robert Gooch, writes in his "Practical Compendium of Midwifery," pp. 52 and 53, 1831 (a course of lectures delivered at St. Bartholomew's Hospital), "it consists of two straight silver cannulæ, about 8 in. (20.3 cm.) in length, a

strong ligature, as of whip-cord, is to be passed through one of these cannulæ, and from this, through the other; the ends of the ligature will hang from those of the cannulæ, which are connected above by the passage of the ligature from one to the other. These cannulæ are to be placed close together, so as to form, as it were, one instrument, and are then to be introduced in front of the tumour as high as the place where it is intended to tie it: the cannulæ are then to be separated; one of them is to be carried round the tumour in one direction, and the other in the opposite direction, when they again meet, and are to be kept close together. Thus the ligature is passed round the base of the tumour. It remains to fix these cannulæ—and this is done by an instrument consisting of a small silver rod, having two rings at its upper extremity, just large enough to admit the two cannulæ; these rings are joined together at their sides; and two short cannulæ, forming one double cannula at its lower extremity, with rings at their sides, to which the ligature is to be fastened. The ligature being passed round the base or neck of the tumour, and the cannulæ being held close together, the rings of the instrument just described are to be passed over the cannulæ to their upper extremity, by which at this point the cannulæ will be held close together; the short cannulæ are in like manner to be passed over the lower extremity of the long cannulæ, which also will be kept by them close together. Thus the cannulæ are so fixed, both above and below, as to form only one instrument. The ends of the ligature are now to be drawn tight, and are then to be fastened to the little rings projecting from the sides of the short cannulæ."

This well-known instrument is figured in another work by Gooch, "Diseases Incident to the Puerperal State." The cannula here preserved has the long movable tubes, and also the silver rod with two rings at its upper extremity through which the long tubes pass and slide. The rod is also, as in the original pattern, connected below with two shorter tubes forming a double cannula. This short double cannula, however, does not bear rings at its sides for fastening the ligature, but fits into two tubes connected with a piece of metal bent down on each end of a revolving bar. A hook is fixed to the middle of the bar to catch the ends of the ligature, and when the latter is made fast the bar is revolved by a ring at each end outside the piece of metal.

Gooch's cannula, and its application, are well figured in David Davis' "Principles and Practice of Obstetric Medicine," 1836, Atlas, Pl. xx. D., which "represents the most recently invented, or rather greatly improved instrument, by Richter atnd Gooch, for strangulating pediculated tumours." Levret, it is generally believed, first used a double cannula for passing ligatures round

the pedicles of fibroids. Denman's cannula was single. The double cannula was known to surgeons, long before Gooch's modification, as an instrument used for operations on nasal polypi.

Benjamin Barrow, Esq., 1871.

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203. **Chassaignac's Chain Ecraseur.**

Click-Clack Movement.

14 in. (35.6 cm.) long, not measured along curve, and with cross-piece $4\frac{1}{4}$ in. (10.7 cm.) closed against the handle which is $3\frac{3}{4}$ in. (9.5 cm.). "Lutter, Berlin."

A large-sized curved ecraseur with chain and click-clack movement, worked by a metal cross-piece which shortens the chain loop as it is drawn down away from the handle, the two springs above the handle being pressed upon. On letting go the springs the chain loop is fixed. The handle is coated with chequered ebony before and behind. This instrument is one of the types of Chassaignac's ecraseur used in general surgery. It was once much employed for the removal of pedunculated uterine fibromyomata.

Royal Society of Medicine.

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204. **Chassaignac's Chain Ecraseur.**

Screw and Wheel Movement.

Length 12 in. (30.5 cm.), exclusive of wheel; handle 5 in. (12.7 cm.) long. *Royal Society of Medicine.*

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205. **Chain Ecraseur.**

Shank bent by strain on chain applied to a "Fibroid."

A chain ecraseur of the Chassaignac type, worked by a wheel originally about 11 inches (28 cm.) long, when unbent. The spoked wheel at the lower end of the handle (which is lined with chequered wood) is wanting. The shank is bent one inch and a half (3.8 cm.) from its extremity, about 35° on its long axis. Part of a very stout chain, which was applied to a uterine fibromyoma on the last occasion when the instrument was used, is preserved.

"Charrière: A Paris."

Described by Sir Spencer Wells when he presented it to the museum of the College as a "Chain ecraseur, the shank of which became bent by the strain on the chain during the extraction of a large uterine fibroma." Such accidents were not rare when the chain écraseur was extensively used.

Sir T. Spencer Wells, Bt., 1878.

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206. **Maisonneuve's Chain Ecraseur. (I).**

Length $12\frac{1}{2}$ in. (31.75 cm.), the metal stem 7 in. (17.7 cm.).

"Weiss, London."

The well-known ecraseur, used for uterine fibroids. A chain is worked by a screw, turned by a spoked wheel. The screw is revolved until the loop is of the desired size and can be slipped over the tumour so as to surround the pedicle. Then the screw is turned from left to right, which tightens the loop so that it cuts through the tissues of the pedicle, twisting the latter to a certain extent, and, ultimately, the pedicle is severed without hæmorrhage.

Charrière originally made this instrument for Maisonneuve.

Royal Society of Medicine.

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207. **Maisonneuve's Chain Ecraseur. (II).**

Length 12 in. (30.5 cm.), metal stem 6 in. (15.24 cm.). "Maw, London."

A similar instrument with trifling modifications.

Messrs. Maw, Son and Sons, 1914.

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208. **Braxton Hicks' Annealed Steel-Wire Rope Ecraseur.**

Length 14 in. (35.6 cm.). "Coxeter, London."

The shaft is fitted with screw power. A cross-bar, concave on extremity of the handle. The wire rope (12 strands) is fastened by one end to a button-like travelling hook. The eye is oval, having the edges everywhere carefully rounded so as not to cut the rope, even at a considerable angle to the shaft. It is bent at a right angle to the shaft, "so that it forms altogether a considerable curve on which the rope bears while in use; the instrument can then be used in any position within the vagina and uterus. There is a cross-bar at the lower end of the shaft with which to fix the rope after adaptation. Any sized rope can be used: for the largest, one made of 60 or 70 strands of carefully but not too fully annealed steel wire is required for the removal of the cervix uteri and the larger polypi," Cat. Obst. Soc., 1866, p. 66 and fig. 63, where the instrument figured bears a circular screw handle with three arms. The drawing is taken from Braxton-Hicks' "New Instruments for the removal of Uterine Polypi, etc." *Trans. Obstet. Soc.,* vol. iii, 1861, p. 346, in which memoir the author describes his instrument and gives directions for its use. The principle of its construction was "the adoption of the annealed steel wire rope to a modification of the screw-ecraseur." In cases of intra-uterine pedunculated myoma or bulky tumours of that kind already extruded into the vagina, cannulæ with handles were added for the passage of the wire rope, which was then worked by the ecraseur. (See fig. 63, *loc. cit.*). David Davis figures a similar contrivance, "an instrument the principle of which was first suggested by Desault" in "Principles and Practice of Obstetric Medicine," 1836, Atlas, Pl. xx.B.

Royal Society of Medicine.

209. **Braxton Hicks' Large Ecraseur (I).**

13 in. (33 cm.) long from free end to wheel.

"Krohne, London."

This instrument has been widely employed and as widely modified. It bears a circular screw handle without arms and a very short cross-bar two inches above the handle. Three different end-pieces can be screwed on to this ecraseur, according as a wire, a wire rope, or a double wire rope is required. The essential feature of this instrument is explained by the inventor (*Trans. Obstet. Soc.*, vol. vii, 1865, p. 71): "Dr. Braxton-Hicks exhibited an improvement on the mode of fastening the rope in his ecraseur, which will allow any length of rope to be used, thus doing away with the awkward and cumbersome addition of the endless drum of Weiss. Instead of using one hook or button on which to fasten the moving end, two hooks are now employed back to back, whereby two figure-of-eight hitches can be made, sufficient to keep the rope from slipping. . . . . The hooks should be made as neatly as possible, but deep enough to hold two turns of rope."

In the ecraseur of the Braxton-Hicks type the cross-bar to work the screw seems to have been replaced by the wheel, as in this sample, and later on three spokes were added to the wheel (see No. 211), but the spoked wheel is represented in Braxton-Hicks' drawing published in 1861, *Trans. Obst. Soc.*, vol. iii, p. 346, quoted under the description of the preceding instrument (No. 208), and the primitive cross-bar has been re-adopted in preference to the wheel by many later gynæcologists and instrument makers.

Royal Society of Medicine.

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210. **Braxton Hicks' Large Ecraseur (II).**

"S. Maw and Son."

Almost identical with I, being fitted with the back-to-back hook arrangement for the moving end of the wire. It bears the largest sized end-piece, for extra strong wire rope.

Penrose Williams, Esq., 1912.

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211. **Braxton Hicks' Large Ecraseur.**

(*With spoked wheel.*)

14 in. (35.6 cm.) long from free end to wheel.

A very large ecraseur, conspicuous for the three knobbed spokes, each nearly one inch long, attached to the wheel. The end-piece, very stout, has been soldered on to the stem. The hook is single and turned downwards. The cross-bar $2\frac{3}{4}$ in. (7 cm.) wide, lies 3 in. (7.6 cm.) above the handle.

This sample was the property of Dr. C. H. F. Routh, and was constructed by him so that very stout wire or wire-rope might be applied to short and broad pedicles of fibro-myomata of the uterus.

Dr. Amand Routh, 1914.

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212. **Lazarewitch's Uterine Ecraseur (I).**

Presented to the Obstetrical Society of London, labelled "New Constrictor for the Removal of Uterine Tumours of (*sic*) Professor Lazarewitch, Kharkoff, Russia." Date not preserved.

This instrument has a German silver stem $9\frac{1}{2}$ in. (24.1 cm.), slightly curved at its extremity which is fitted with a hollow steel mount through which passes a wire loop. The stem ends below in a three-sided steel box, containing a drum (over which the wire rides) with a rack and pinion action, the axis of which is split, thus forming a double spring for facilitating removal, held in position by a steel hook-catch, and fitted with a double cross-bar thumb-piece $2\frac{1}{2}$ in. (6.35 cm.) long. The loop of wire is pulled down by turning the thum-piece. The whole is mounted on an oval, fluted ebony handle $2\frac{3}{4}$ in. (7 cm.) long by 1 in. (2.5 cm.) wide.

Royal Society of Medicine.

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213. **Lazarewitch's Uterine Ecraseur (II).**

Presented to the Obstetrical Society of London. No date preserved.

This instrument has a $3\frac{1}{2}$ in. (8.87 cm.) brass stem, steel mounted, on to the end of which is plugged a 2 in. (5.08 cm.) hollow steel stem slightly curved. The brass stem terminates below in an oval, grooved ebony handle ($2\frac{1}{2}$ in. (6.35 cm.) long by $1\frac{1}{4}$ in. wide with somewhat flattened sides. On to the base of the handle a hollow steel mount is fitted. A steel rod passes through this mount, and at the terminal end of the rod there is a coarse screw-thread over which travels a double thumb-screw. A looped steel wire is fixed on to the uterine end of the rod, and the loop, when applied to the pedicle of the polypus, is tightened by turning the thumb-screw from left to right.

It is not certain whether this instrument be newer or older than No. 212. *Royal Society of Medicine.*

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214. **Simpson's Polyptome or Polypus Knife.**

Length $8\frac{1}{2}$ in. (21.5 cm.); stem $4\frac{1}{2}$ in. (11.4 cm.). The down-curved extremity of the hook is one inch (2.54 cm.) from the stem.

"S. Maw."

A nickel-plated steel stem, ending above in a hook, forming not

a true curve but flattened so as to be almost straight except at the extremity which bends down nearly at a right angle. This extremity is blunt, but the metal is cut out of the concavity of the hook so as to form a sharp blade. Handle 4 in. (10.16 cm.) long, ebony, four-sided and chequered.

The use of this polyptome was first proposed to the Obstetrical Society of Edinburgh in June 1851, and the instrument was figured and published by the author in an article "On the Excision of Large Pedunculated Uterine Polpi and its Advantages over Deligation," *Edin. Monthly Journ. Med.*, Jan. 1855, p. 10, reproduced in Dr. Watt Black's edition of Simpson's "Selected Obstetrical and Gynæcological Works," Vol. i, p. 724, and Fig. 28, also Vol. iii, Fig. 131, p. 725, where the description is shorter. In the original pattern the hook formed a semicircle, and its cutting portion was a separate "small piece of well-tempered steel blade" let into the metal. The polyptome measured ten inches (25.4 cm.), "the length of the wooden handle being four inches (10.16 cm.), and that of the metallic shaft six inches (15.24 cm.). A shorter instrument might, perhaps, suffice equally well." There was a knob on the front of the handle so that the operator could "be always able to discover the direction to which its hooked extremity points after it is introduced into the vagina." The right forefinger was passed up to the pedicle of the polypus and the hook then slipped over it, the handle being held in the left hand. A slight rolling or sawing motion was "all that is generally required" to sever the pedicle. Simpson had used this instrument freely and successfully for large and small polypi for several years before the above report was published.

Messrs. S. Maw Son and Sons, 1914.

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215. **Aveling's Polyptrite.**

Length 1 foot (30.5 cm.) when closed. "Maw & Son."

"This instrument was invented in 1849, and modified in 1857 and 1863. It consists of a long hook, a slide, and a screw. In using it the hook alone is first passed over the neck of the polpus; the slide is then pushed up as far as it will go by the hand, and then, by means of the screw, the operation is completed by forcing the blunt blade of the slide into the fenestrated concavity of the hook, and through the neck of the polypus. The flat plate is to be held by the thumb and finger of the left hand to prevent the instrument from rotating. It is of great consequence that the blade of the slide should fit accurately into the opening in the hook." Cat. Obstet. Soc., 1866, p. 186, Fig. 185. Dr. Aveling first made the instrument known in June 1862. "He and others who had used

the polptrite had found its application easy, rapid and safe, and in no instance has he heard of the slightest hæmorrhage following its employment." He preferred it to the polyptome, "it being a recognised fact that crushed wounds are not as liable to bleed as cut ones." ("The Polyptrite: A new Instrument for crushing the Necks of Uterine Polypi," *Trans. Obst. Soc.*, Vol. iv, 1862, p. 135.) *Royal Society of Medicine.*

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216. **McClintock's Fenestrated Polypus Forceps.**

Length $8\frac{1}{4}$ in. (21 cm.). "Mtaw & Sons" (nearly effaced).

This instrument ends in a triangular fenestrated enlargement of both blades, grooved on the inner surface as in many hæmorrhoidal and tongue forceps, and measuring about half an inch (1.27 cm.) at its broadest point. The lock is of the modern French obstetric forceps type, a screw pivot with a broad thumb-piece on one blade fitting into a notch in the other blade. The handles are in apposition for 2 inches (5 cm.) above the lock and then cross. They end in scissor rings bearing a spring rack.

Cat. Obstet. Soc., 1866, p. 111, and Fig. 100, which represents a variety with common scissors-lock and a catch between the handles, in place of the spring-rack. Both samples were exhibited in 1866.

This instrument is very similar to the tongue-forceps used by anæsthetists 1921—see Arnold's list current at that date, p. 647. It may be compared with the ovum-forceps, 146A, of similar pattern, where the fenestrated blades are much larger.

Royal Society of Medicine.

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217. **Weiss' Sliding Scissors for Polypus Uteri.**

1 ft. (30.5 cm.) long, exclusive of fixed blade at extremity, which is 1 in. (2.54 cm.) long; the shank is 8 in. (20.3 cm.) long.

"Weiss."

A steel bar, mounted on a four-sided chequered horn handle, bearing the name of the maker on its upper surface to indicate the direction of the blades. The bar terminates in a blunt-ended blade which turns up at an obtuse angle and is sharp along its concavity, and perfectly plane, as is the stem itself, on its inner side; this blade is prism-shaped exteriorly. A metal tube, $7\frac{1}{2}$ in. (19 cm.) in length, slides on the stem and ends in a blade of similar character, but sharp on its convex edge, fixed to it by two rivets. When pushed upwards, the sharp edge of the movable blade opposes that of the fixed blade on the stem, until the two lie completely in apposition, with the sharp edge of each guarded by the blunt edge

of the fellow blade. This arrangement prevents damage to the cervix or vagina when the pedicle of the polypus is severed. The lower end of the tube bears a round disk 1 in. (2.5 cm.) in diameter and concave superiorly; it encircles the stem and allows the sliding blade to be worked with ease. The operator grasps the handle in his hand and moves the disk at will by means of his thumb. The handle bears a small screw connected with the stem which can be removed for cleaning purposes. *James Luke, Esq.*

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218. **Simpson's "Hysterotome or Metrotome" (I).**

Length 10¼ in. (26 cm.); of cutting edge of blade 2 in. (5 cm.).

"Maw and Son."

Simpson ("Clinical Lectures on the Diseases of Women," vol. iii, 1872, p. 254), in lecturing on the division of the cervix uteri for dysmenorrhœa, says: "The instrument which I use for the purpose is a kind of concealed bistoury, such as I now show you." He gives full instructions for the use of the instrument without any description of its mechanism.

"*Sir James Simpson's Instrument* is a kind of *bistouri caché*, the end of the instrument which carries the knife is about 2½ inches (6.35 cm.) long, and of the size of an ordinary uterine sound. The blade is kept closed by the force of a spring acting upon the handle, and is forced out by pressure approximating the two handles, the degree to which the blade is projected being regulated by a screw fixed into one of the handles. By this instrument one side only is cut first, the instrument is then reversed and the other side is similarly treated, the cutting being effected partly by the projection of the blade and partly by the withdrawing of the instrument while the blade is being exposed." Cat. Obst. Soc., 1866, p. 118, and fig. 107, which represents a slightly different instrument without the small projection below the sheath of the knife at the point where it joins the shank. This projection marks a small bar running between the side of the guard, to fit which bar a notch has been cut out of the back of the knife. The regulating screw lies in Fig. 107, *loc. cit.*, further back, and below the spring transfixing the straight handle (see 220). In some later patterns, as in the instrument here preserved, the screw is much smaller and transfixes the lever handle close to the lock and in front of the spring, running in a slot. Barnes modified Simpson's Metrotome by dispensing with one side of the guard. The instrument bears a strong resemblance to Barlow's modification of Frère Côme's *bistouri caché*, G. 127 in this R.C.S. collection used in lithotomy."

See next instrument, "Simpson's Metrotome II," which is nearer to Simpson's drawing. Simpson's metrotome was first used

by its inventor about 1845. (Proceedings of Edinburgh Obstetrical Society in *Edin. Monthly Journ. Med. Science,* May 1847, p. 870.)

The original *bistouri caché* or *attrape lourdeau* ("booby trap") so called because the patient was not aware that it contained a knife till he felt its edge, was known to Scultetus. See notes to Blizard's *bistouri caché,* No. 36, Pt. I, Dressing, etc., instruments, where the phymosis knife with this mechanism is noted. In Perret's "L'art du coutelier" 1772, this type of bistoury is represented, Pl. 99, fig. 8 and Pl. 100, fig. 10, is a modification closely resembling Simpson's metrotome.

Royal Society of Medicine.

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219. **Simpson's Metrotome (Ia).**

Almost identical with I, the ebony handle is smooth instead of chequered, and the head of the screw in the hinge is on the right, instead of the left side.

"S. Maw, Son & Thompson, London."

Messrs. Maw, Sons and Son, 1914.

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220. **Simpson's Metrotome (II).**

Measurements almost the same as in I, except that the lever handle is longer, reaching as far back as the fixed handle.

In this instrument there is a big regulating screw and it passes, much below the spring, through the fixed or straight handle, and does not slide in its handle as in Nos. 218 and 219. It closely resembles the instrument represented in Simpson's own description, *loc. cit.,* No. 218, Fig. 56, p. 254, of his "hysterotome or metrotome." "To the end Sir James used such an instrument as is figured in the 'Clinical Lectures.' That with the screw in the lever handle may be the modification of some instrument maker or gynæcologist." (Sir A. Russell Simpson, *Priv. Correspondence.*)

Penrose Williams, Esq., 1912.

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221. **Eduard Martin's (?) Metrotome (I).**

Length $13\frac{1}{4}$ in. (33.65 cm.); cutting part of knife 2 in. (5 cm.).

"Pratt, London."

This instrument is entirely made of metal. It consists of (1) a handle continuous with the guard or sheath, measuring together $13\frac{1}{4}$ in. (33.65 cm.); (2) the front of the guard, 8 in. (20.32 cm.) long, fitting at its extremity into a cap at the free end of the back part; (3) the knife, broken at the tip, of which the cutting part, sharp on both sides, is 2 in. (5 cm.) long, and curved on the flat, the guard (1) and (2) being similarly curved to fit it. The knife is continued downward as a flat sheet of steel, lying between the guards, ending

in a symmetrical pair of lever handles about 5 in. (12.7 cm.) long, a screw holds (1), (2) and (3) together. There is a spring fixed to each lever handle in the middle pressing against the metal stem, and a curved screw bar runs through all three handles, and bears two regulating screws, one on each side of the handle. By pressure on one lever handle the knife is deflected to the right, and by pressure on the other it is deflected to the left, whilst by means of the regulating screws it can be fixed in any desired degree of extrusion from the sheath.

This particular instrument, made in London, appears to be an earlier and more complicated form of No. 222, which is easily identified and is known to be Eduard Martin's invention, an adaptation of Dupuytren's lithotomy bistoury, which seems a modification of Guy de Chauliac's "forfex excisoria," used in the 14th century for arrow wounds. C. H. F. Routh devised a curved metrotome about 1850; see note to next instrument, No. 222.

Penrose Williams, Esq., 1912.

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222. **Eduard Martin's Metrotome (II).**

Length, not measured by curve, 15 in. (38.1 cm.), including square wooden handle ($3\frac{1}{2}$. (8.8 cm.) long.

"*9, University Street.*"

A much simpler type of instrument than No. 221, but it bears two separate blades. Both the back and front part of the sheath are in one piece, continuous with the metal portion of the handle. Each lever handle is continuous with a blade on its own side, each bears a spring, but the regulating screw action is much less complicated than in 221, one screw being fixed in each handle.

This instrument is very similar to Dupuytren's double *bistouri caché* used in lithotomy. (G. 128 in this collection). It is figured in Martin's "Atlas of Obstetrics-Gynæcology," Dr. Fancourt Barnes' translation, 1881, Pl. xciv, fig. 19, and is described as a "double knife for incision of the os uteri, after E. Martin." It was also figured in the original "Atlas," 1861.

Instrument makers can testify that between 1850 and 1880 many contrivances for dividing the cervix were devised, modified, and often misnamed. C. H. F. Routh claimed in 1864 that he invented, before 1850, a double-bladed bent instrument, and that he modified it in later years. "The part which penetrates the uterus and two-thirds of its length beyond this, consists of a semi-circle." "On the Use of the Hysterotome," *Brit. Med. Journ.*, vol. ii, 1864, p. 485. In the Hystetrotome or Metrotome still (1913) known by Routh's name, the sheath is bent on the flat, concealing the short blades. See Cat. Obst. Soc., 1866, p. 129 and fig. 123. In some samples there is no bend. The instrument here exhibited appears

to be undoubtedly E. Martin's, and an adaptation of Dupuytren's *bistouri caché.*

See also notes on 227 "Routh-Greenhalgh Metrotome."

Penrose Williams, Esq., 1913.

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223. **Greenhalgh's Bilateral Metrotome (I).**

"S. Maw and Son, London."

"This instrument is 11½ in. (29.2 cm.) in length and ends in a blunt extremity like uterine sound 2¼ inches (5.7 cm.) long. It consists of two lateral halves, which can be firmly clasped together; each half contains an inclined plane, regulated by an adjusting screw, upon which a blade is made to move downwards and outwards by pulling the handle of the instrument. The advantages claimed by the inventor for this instrument are: (1) Its extreme simplicity; it can easily be cleaned. (2) Its use requiring no exposure of the patient. (3) Its easy, safe, and painless application. (4) Its cutting from within outwards, the blades gradually diverging, thus dividing the internal os slightly, the external os freely. (5) The accuracy with which the direction and extent of the incisions can be regulated. (6) The rapidity and certainty of its action." "Cat. Obstet. Soc.," 1866, p. 119 and figs. 108, 109. This instrument is practically the same as that represented in the "Catalogue" excepting that it is one inch longer, 12½ in. (31.75 cm.), whilst the extremity guarding the blades is shorter, 2 in. (5 cm.).

The blades when at rest are under the cover of a blunt and narrow metal end, forming a *bistouri caché* for introduction into the cervical canal. When the handle, lined with chequered ebony, is drawn down the blades part, projecting from the metal guard and cutting into the cervical walls. Having effected their object, the blades, which run in grooves concealed by the metal cover, retreat under the guard when the operator lets go the handle. The open S-shaped slot upon which the blades travel is guarded by a metal shield, on each side, opening outwards on a pivot below. The metal cover, which like the handle consists of two pieces, ends in a disk, 1 in. (2.5 cm.) in diameter, with a double-milled edge, bearing a slot through which the metal part of the handle passes upwards to the blades. The mechanism is further displayed in the next instrument, No. 224.

Marion Sims strongly condemned this instrument. "Too much is left to the execution of a machine instead of the judgment of the surgeon." "Clinical Notes on Uterine Surgery," 1866, p. 156.

Greenhalgh's Metrotome seems to be a modification of a more primitive instrument, Coutouly's *uterostomatome,* figured in Witkowski's "Arsenal Obstétrical," fig. 191, p. 45).

Royal Society of Medicine.

224. **Greenhalgh's Bilateral Metrotome (II).**

A similar instrument to No. 223, rather longer—13 in. (33 cm.), whilst the narrow extremity is of the same length, 2 in. (5 cm.).

"Pratt, London."

The blades are shown expanded, projecting from the narrow guard at the extremity, the chequered wooden handle being drawn down. The metal shields are turned outward in their pivots to display the slot upon which the blades travel. There is, in addition, in this instrument another metal shield to hold its lateral halves more securely together. Below, on the middle of the surface of the handle there is, as in No. 223, a T-shaped piece of metal, which can be revolved over a slot, so that its halves may be united or separated. This mechanism is similar to the Charrière-Péan joint (see No. 50), but in the latter the T-shaped piece of metal is fixed.

Royal Society of Medicine.

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225. **Mathieu's Metrotome.**

Length $13\frac{3}{4}$ in. (34.9 cm.). "Krohne & Son, London."

Similar to Greenhalgh's metrotome. The mechanism is concealed and guarded by a solid plate of metal on each side. The terminal portion is shaped so as to form a blunt guide guarding the blades during their introduction into the cervical canal, after which they are opened by pulling the handle. C. H. F. Routh also designed, according to Cat. Obstet. Soc., 1866, p. 128, and Fig. 122, a double, short-bladed hysterotome, with straight blades as in Greenhalgh's, but with the mechanism concealed, apparently identical with this instrument. Routh, however, ultimately preferred curved blades (see Nos. 226, 227). In the trade this instrument is known, it appears, as Mathieu's metrotome.

Royal Society of Medicine.

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226. **Routh-Greenhalgh's Metrotome (I).**

Length $11\frac{1}{2}$ in. (29.2 cm.); blunt extremity $2\frac{1}{4}$ in. (5.7 cm.).

"Coxeter & Son, London."

As in Mathieu's metrotome the mechanism is concealed and guarded by a solid plate of metal on each side, but there is a spring catch on the front plate for fixing the blades. The sheath and blunt extremity (nickel-plated steel) and the blades are slightly but distinctly bent (in No. 227 this bend is increased). The metal cover is separated from the handle, not by a flat disk, as in Nos. 223, 224 and 225, but by a metal cup, with its concavity upwards. The handle is made of chequered ebony, stout and flattened, and is connected with the blades by a screw. When the handle is screwed

on and drawn down the blades protrude from the guard, as in No. 223.

See C. H. F. Routh, "On the use of the Hysterotome in certain Forms of Uterine Disease," *Brit. Med. Journ.*, vol. xi, 1864, p. 483. Routh maintained that a straight blade, like Simpson's was dangerous, as it made the cut at the internal os as deep or deeper than at the external os. Curved blades when pulled down the canal of the cervix descend in the same plane, and the cut surface is therefore uniform. The blades and also the upper part of the stem of a metrotome should, according to Routh, be curved in order to cut thoroughly yet safely, without wounding the circular arteries at the level of the os internum. Routh remembered that "Dr. Greenhalgh's first instrument was on a curve, but only in its extreme end," and restored the curve as seen in this sample (see also description of Edward Martin's Metrotome II, No. 222). Routh also designed a modification of Greenhalgh's metrotome with the blades and sheath *straight*, as in the original (see No. 225), and another straight metrotome of a different type. Lastly, Routh introduced another metrotome, that which always goes by his name, with the blades and sheath not curved, but *bent on the flat*. See Cat. Obstet. Soc., 1866, Fig. 123, p. 129.

Dr. Amand Routh, 1914.

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227. **Routh-Greenhalgh's Metrotome (II).**

"Krohne and Sesemann."

An instrument very similar in mechanism and proportions to the preceding. The main difference is that, consistently with the modifier's views quoted in the description of No. 226. the bend of the blades has been greatly increased. The metal sheath is wider, and the handle bears a slot into which the metal connected with the blades is inserted. A screw nut passes through the cap of the handle and a perforation in the metal, making the handle fast to the blades. The metal cup (replacing the flat disk in No. 223, etc.) may be screwed on with the concavity downwards if desired, but is here fixed as in No. 226. The handle is hexagonal and made of chequered ebony with smooth sides.

Messrs. Krohne and Sesemann, 1914.

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228. **Lazarewitch's Hysterotome.**

"Professor Lazarewitch exhibited a knife which he thus describes:—For the incision of the vaginal portion of the womb I employ a knife similar to a tenotome, the handle of which is 5 in. (12.7 cm.) in length, and in which are two blades each $3\frac{1}{2}$ in (8.8 cm.)

long. For about an inch at the end of the blade there is a common (*sic* ? convex) sharp edge, the opposite side being concave and blunt; the point of one blade is sharp, that of the other blunt and thick; and he (*sic*) adds, I perform the incisions not on the external surface of the neck of the womb, but introduce the point of the knife into the orifice and cut the anterior and posterior lips. From two to four incisions may be made—the depth being 1 line and the length from 3 to 4 lines."

"The following are given by the author as the special advantages of this operation: (1) That the incisions are made in all directions with facility; (2) That more blood is discharged than by incision on the external surface of the lips; (3) The wounds are not irritated by contact with the vaginal walls from which they are protected by the uncut outer portion of the cervix." Cat. Obstet. Soc., 1866, pp. 127, 128.

The above description is not quite clear, the personal pronouns are confused, and there are no inverted commas in the original. A uterine scarifying knife and a Sims' uterine knife for the cervix are made to fold into the same (vulcanite) sheath, as in surgical pocket-case instruments. *Royal Society of Medicine.*

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229. Godson's (?) Metrotome..

(*After Peaslee.*)

Length 12in. (30.5 cm.); the bar which works the blades can be drawn out to the extent of 4 in. (10.16 cm.); sliding tube 3 in. (7.6 cm.). "Coxeter."

Four steel blades, $\frac{3}{8}$ in. (.9 cm.) long, and widest below, run in four slits, 4 in. (10.16 cm.) long, cut in a metal tube which bears a screw cap at its free end to hold together the four split parts of the tube. The blades are attached to a metal bar ending in a button at the lower end of the tube, and are moved by pulling on the button, and a small screw can be slid along the bar to fix it where desired. An outer sliding tube 3 inches (7.6 cm.) long bears a cup-like expansion at its upper end, a sheath to the blades during the introduction of the tube into the cervical canal. When the free end of the instrument is introduced into the cervical canal, the sliding tube is fixed by a screw, and then the blades are pushed upwards, the operator pressing on the button, and the os internum is divided. Lastly, the button is drawn so as to bring the blades into the sheath, and the instrument is withdrawn from the uterus.

This instrument was, it appears, sold by a dealer as "Godson's Metrotome," but Dr. Clement Godson denied that he either contrived or suggested it. It somewhat resembles in mechanism a metrotome invented by Peaslee. *Penrose Williams, Esq.*

230. **Sims' Uterine Scissors.**
(*Straight.*)

1 ft. (30.5 cm.), $1\frac{1}{4}$ in. (3.17 cm.) from point to joint.
" Coxeter."

The most exaggerated type of elongated scissors, the shanks being 9 in. (22.8 cm.) long. The blades, perfectly straight in a line with the shanks, are of the ordinary domestic scissors type, but very short, sharp and pointed; the ring handles project inwards, so that the shanks are wide apart below when the rings are brought into contact and the blades closed. The screw or scissor-joint has a block on the shank side. The long spreading shanks ensured power, whilst the rings, projecting inwards, formed a check on the action of the blades. It is the earliest form of scissors used for division of the cervix.

These scissors were metrotomes, being designed for division of the cervix, sometimes including the os internum. The division of the parts was completed by means of a small curved, blunt-pointed and narrow-bladed knife like one blade in No. 228, resembling a diminutive razor, mounted on a stem on which, by a special contrivance, it could be moved to the angle desired, and fixed. The knife divided " the small amount of tissue on each side leading from the scissor-cuts up to the very cavity of the womb. The scissors never cut the whole amount of tissue embraced between the blades. The advantage of cutting the edges of the os with scissors is that we make the incisions perfectly equilateral and symmetrical" (Marion Sims' "Clinical Notes on Uterine Surgery," 1866, p. 158). Sims always provided himself with four forms of these metrotome scissors: (1) scissors with blades in a straight line with the shanks, like this instrument; (2) scissors with blades curved on the flat, like No. 231; (3) scissors with blades angled on the flat, like No. 232; (4) scissors with blades elbowed, or bent to one side. (By the above terms these four varieties are still distinguished in the trade.) *Royal Society of Medicine.*

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231. **Sims' Uterine Scissors.**
(*Curved on the flat.*)

Length 6 in. (15.2 cm.); blades $1\frac{1}{2}$ in. (3.8 cm.); shanks $4\frac{1}{2}$ in. (11.4 cm.). " Weiss."

The blades are short, curved on the flat, and blunt-pointed; they are concave for the first $\frac{3}{4}$ in. (2 cm.) from the point, the object being the prevention of the tissues from slipping. Screw-joint, with block on the handle or shank side, handles square and not rounded along their outer side.

An early pattern. As the handles proved inconveniently short, Sims had the shanks lengthened, increasing the total length to 8 in. (20.3 cm.), without lengthening the blades.

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232. **Sims' Uterine Scissors Angled on the Flat.**

Length, not measured along angle $7\frac{1}{2}$ in. (19 cm.); point to angle 2 in. (5 cm.); extremity to joint $1\frac{1}{4}$ in. (3.17 cm.). "J. Mayer."

In this scissors the blades, including the joint, are bent on the shanks at an angle of 45°. The blades are short, stout and blunt, and the joint is well-shouldered. Screw-joint with a shank block. The handles are stout, quite straight, rounded externally throughout and in apposition on their inner surfaces when closed.

The joint being placed above the bend, the blades are less liable to overlap and to pass over the tissues without cutting them. The position of the shoulder gives greater strength to the blades. Thus these powerful short blades cut with accuracy when the tissues are tough or œdematous.

This instrument is a typical sample of the third variety of Sims' uterine or metrotome scissors. (See description of the first or straight variety, No. 230.) Sims figures these scissors, *loc. cit.*, fig. 54, p. 159, adding: "I now (1866) often use scissors with short, straight blades, but curved above the joint, as here shown." It is also figured in Cat. Obst. Soc., 1866, fig. 116, p. 125. The handles are rounded externally, whilst in Sims' drawing, and in the scissors curved on the flat, No. 231, they are square.

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232A. **Sims' Small Blunt Knife for Division of the Cervix.**

Described by Dr. Marion Sims in the Cat. Obstet. Soc., 1866, pp. 125–6 and fig. 117. The cervix is fixed by a small tenaculum and then divided with straight-bladed but angular (or else curved) scissors, one blade being passed into the canal of the cervix. "Thirdly, the part of the cervix between the cut portion and the internal os or cavity of the uterus is divided by means of the small blunt-pointed knife. This is fixed in a handle and may be set to any angle by a screw at the end of the instrument." An extra knife, in a small box lined with red velvet, is placed beside it. The knife is shaped somewhat like a razor, with both back and blade distinctly convex, and the free end broad and well-rounded.

Formerly the property of Mr. Arthur Durham, Surgeon to Guy's Hospital.

Frederic Durham, Esq., and Dr. H. A. Durham, 1918.

233. **Emmet's Ball-and-Socket Knife.**

Length $10\frac{3}{4}$ in. (27.3 cm.); of blade $1\frac{3}{8}$ in. (3.5 cm.); the shank of the knife and the metal stem measuring about 5 in. (12.7 cm.).

"Maw, London."

Thomas Emmet describes and figures this instrument in "The Principles and Practice of Gynæcology," 2nd ed., p. 43, and fig. 19. "Occasionally a knife is necessary at some point inaccessible to the scissors, and the *Ball-and-Socket Knife* will be found useful. About the year 1861, Dr. Sims introduced a knife for dividing the cervix laterally, which had a single joint, so that the blade could only be moved as the radius of a single circle, and was locked by a screw in the joint. About two years afterwards I devised the above instrument. . . . . The shape and size of the blade are like that in Dr. Sims' instrument, but the ball-and-socket joint permits the blade to be placed at any angle, and firmly secured by locking the handles." For the use of the short knife, as originally taught by Sims, see description of Sims' Uterine Scissors (straight), No. 230, in this collection.

In this sample the knife is straight, in Emmet's work (*loc. cit.*, fig. 19) it is represented and described as like Sims' in shape and size, that is to say smaller, and razor-like in form, its cutting edge being convex as in one of the blades in Lazarewitch's hysterotome, No. 228. The handle, which is coated with chequered ebony, and the stem open up so as to free or to fix the knife as desired, the stem bearing a scissor-joint below the socket for the knife.

Messrs. Maw, Son and Sons, 1914.

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234. **Coghlan's Probe-pointed Metrotome and Hysterotome Knife.**

Presented by Dr. Coghlan, of Wexford, packed in the case also containing his Uterine Dilator (No. 243 in this collection).

"Savigny and Co., 67, St. James's Street, London."

The original is thus described by Dr. Coghlan: "This instrument consists of a central, blunt or probe-point less than a quarter of an inch (0.6 cm.) long, and about the thickness of a No. 1 bougie, and proceeding from this are two cutting sides about three-eighths of an inch (0.9 cm.) wide. The whole instrument, including the handle, is about eight-and-a-half inches long (21.5 cm.), and is slightly curved for three inches (7.6cm.) from the point to correspond with the oblique position of the uterus. The advantage of the instrument is that, guarded by the probe-point, we are sure, with ordinary care, to have our incision right into the uterine cavity, and perfectly central, and by using instruments of different widths we can have our incision of the exact extent we desire." "On Dysmenorrhœa and Sterility," *Medical Times and Gazette,* vol. i, 1861, p. 572, with drawing,[1] Coghlan described how,

in a case of dysmenorrhœa, he dilated the cervix with a small plug of compressed pine wood, incised the os and cervix with this knife on the following day, and, lastly, introduced a tube of rolled-up sheet lead into the cervical canal. "By means of the leaden tube, we get rid of the disadvantage of having an absorbent, offensive and irritating plug, and of the necessity for frequent examinations." Within a year Coghlan made his knife narrower near the probe-point and added a deep, circular groove at one inch and three-quarters (2 cm.) from the point to serve as a guide to the finger, or to the eye when the speculum is used, to the depth to which the knife has penetrated. He also invented his dilator (No. 243), for the introduction of the sheet-lead tube into the cervical canal after incision by the probe-pointed metrotome.

Each knife (for there are two sizes) has a long stem $4\frac{3}{4}$ in. (12.1 cm.) long, ending in a curved, flattened, leaf-like portion sharp at both edges, rising into a vertical ridge in front and behind, and probe-pointed at its extremities. The stem is fitted on to a smooth ebony handle, four-sided and flat in front and behind. The broader blade measures $\frac{3}{8}$ in. (0.9 cm.), and the narrower $\frac{1}{4}$ in. (6 cm.) in width. This is one of the simplest types of metrotome, and it was ultimately modified by the addition of a guard.

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1. The above description is published in the Cat. Obstet. Soc., 1866, p. 119, without any drawing, and the clinical notes here quoted are omitted.

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235. **Uterine Sound Dilators—Old Type.**

Preserved in a flat wooden box.

Six steel dilators 10 in. (25.4 cm.) long, ends slightly curved and flattened; a shoulder $2\frac{3}{4}$ inches (marked "7," *i.e.* 7 centimetres) from the end. The opposite extremity forms a spoon-shaped handle curved in the reverse direction to the upper end. No. 1, the smallest, is of very slender calibre and not graduated; it was meant for exploration. No. 2 is much thicker, bears a series of fluted depressions on the upper surface, and is graduated (20 centimetres); it was designed for exploration. Nos. 3, 4, 5 and 6 are progressively thicker, and all graduated (20 centimetres), but not fluted, they served for dilatation. The presence of the shoulder on the upper, instead of the lower surface of the stem, and the straightness of the stem for over two inches above the shoulder show that these dilators are of a very old type, in use before the bend extending to the shoulder was introduced, and before Simpson's sound came into general use. The centimetre scale indicates that they are of foreign make. To a certain degree they resemble Peaslee's dilators.

Inventor, maker and donor unknown, not being recorded in the "Transactions of the Obstetrical Society of London."

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236. **Lazarewitch's Uterine Dilators.**

Three sizes numbered 1, 2, and 3, all $8\frac{1}{2}$ in. (21.5 cm.) long, with a notch $2\frac{1}{2}$ in. (6.35 cm.) from free end.

Flexible instruments, made of some preparation of rubber, perfectly straight, points very blunt, notch $2\frac{1}{2}$ in. (6.35 cm.) from free end. Handles flattened out as in a sound or catheter. In make and length they closely resemble the same authority's uterine sounds (Nos. 291 and 292).

Labelled "Dilators of hard caoutchouc, Nos. 1—4 of Professor Lazarewitch, Kharkoff, Russia," in Museum, Obstetrical Society of London. No. 4 is missing. *Royal Society of Medicine.*

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237. **Uterine Dilator.**

(*Early type 1866.*)

Length (not along the bend) 1 ft. (30.5 cm.). From bend to extremity 3 in. (7.6 cm.).

A heavy, solid brass instrument, quite inflexible. The free end is rounded, not probe-like, and the stem immediately below it is $\frac{1}{8}$ in. (0.3 cm.) in diameter. The small flattened handle is marked "7."

This instrument was preserved in the Museum of the Obstetrical Society as an early type of Sims' sound. It is not mentioned in the Cat. Obstet. Soc., 1866, which represents at p. 212, fig. 207, the "sound" and "probe" side by side, as published also in 1866 in Marion Sims' "Clinical Notes on Uterine Surgery," p. 103, figs. 39 and 40. Sims there denounces Simpson's sound as painful and dangerous when introduced into the uterus, being "large and rigid." This sound or dilator is even larger and more rigid than Simpson's well-known instrument.

The number 7 on the handle, and the shape of the end of the bent portion simply narrowing down with no terminal probe-point, suggests that this instrument was designed and used solely as a dilator. Sims, in 1866, strongly objected to dilatation with bougies, maintaining that incision was safer as well as more permanent in its effects (*loc. cit.*, p. 145, 149). Dilatation of the cervix for dysmenorrhœa was, later on, preferred by most authorities and this instrument bears a strong resemblance to a Matthew Duncan's dilator, excepting that the latter was curved, not bent at an angle.

The donor's name has not been preserved.

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238. **Priestley's Uterine Dilator.**

Total length $12\frac{1}{2}$ in. (31.75 cm.); the uterine end to the projection $2\frac{1}{4}$ in. (5.7 cm.); stem $6\frac{3}{4}$ in. (17.1 cm.). "Coxeter."

This instrument is constructed on the principle of Sir Henry Thompson's stricture dilator for males, but is of the shape and size of the long uterine sounds in use in 1866. At the terminal two inches (5 cm.) it turns up, and there is a projection on the convex border at the bend, whilst the extremity is probe-like. The stem is split vertically from just below the extremity downwards for about 4 inches (10.16 cm.). On the under surface of the handle is a finger-ring.

At the end of the handle is a double-milled screw-head which, by revolving from left to right, pulls down a rod on the inside to which is attached a cross-bar, thus causing the extremity to expand. On the upper surface of the handles is a groove with a sliding pin, and three lines are cut on the metal around the groove. These lines indicate the degree of expansion of the dilator. The pin lies at the level of the uppermost mark when half expanded and of the lowest mark when dilatation is complete. A highly-finished instrument, originally plated. Figured in the Cat. Obstet. Soc., 1866, p. 55, fig. 51.

"Dr. Priestley's *Dilator* resembles Mr. Ellis' in the fact that it is of the same size and shape as the uterine sound. It differs, however, in this particular that, while the blades separate, their extremities remain united, so that they form a sort of elliptical opening."

In Thompson's stricture dilator there are two cross-bars to expand the halves of the split stem; in this instrument there is only one cross-bar, as in a variety made for dilatation of the male urethra and sold by dealers as Priestley's stricture dilator. (See Messrs. Arnold and Sons' Catalogue, 1900, fig. 1002, p. 893.)

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239. **Priestley's Uterine Dilator (II).**

Total length 12 in. (30.5 cm.); uterine end to the projection $2\frac{1}{4}$ in. (5.7 cm.); stem below it $6\frac{3}{4}$ in. (17.1 cm.).

"Maw, London."

This sample is nearly identical with No. 238 except that the handle is a little shorter, while the vertical split in the stem and terminal portion extends downwards for 6 inches (15.2 cm.), a more satisfactory arrangement for gradual expansion.

Marked by donor "1870."

W. Dunnett Spanton, Esq., 1914.

240. **Uterine Dilator after Thompson.**

Total length 12¼ in. (31.1 cm.); uterine end to projection 2⅛ in. (6. 35 cm.).

"Krohne & Co., London," on thumbpiece, almost effaced.

This instrument is even less modified from Thompson's stricture dilator than is Priestley's uterine dilator (No. 238). It, like the latter, is of the shape and size of the old long uterine sound, and bears the usual projection on the convex border 2½ in. (6.35 cm.) below its extremity. The extremity of each rod, however, is a piece of metal ⅜ in. (0.9 cm.) long, jointed on to the rod and also united by a joint to its fellow at the free end. The handle is coated on both sides with chequered ivory. When the end of the instrument has been introduced into the uterus, the handle is held between the left forefinger and thumb, and steadied by the right forefinger and thumb applied to the steel thumb-piece immediately above it. The handle is then rotated from left to right, and the split stem expands as in Priestley's instrument by the rod and single cross-bar mechanism. There is a groove on the left side of the handle with a sliding pin to indicate the degree of expansion. A steel clip slides along the stem, to hold its split halves together, in order to keep them from warping or from rusting on their inner surfaces, when not in use.

The thumbpiece testifies that this sample has been freely used. *Royal Society of Medicine.*

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241. **Sims' Three-bladed Uterine Dilator.**

Length 11 in. (28 cm.); of blades from free end to raised ring, marking the limit of introduction into cervix, 2 in. (5 cm.); from free end to lock 4¼ in. (10.7 cm.); third blade with its lever 6¼ in. (15.8 cm.). "Krohne & Sesemann."

Made entirely of steel, nickel-plated, lower part of handles chequered. The handles bear near their free end a rack, which is furnished with a spoked travelling screw by which they can be fixed at any desired point. There is a spring between the handles higher up. The blades work with a parallel motion. By closing the handles a pyramidal block is raised, thus expanding the third blade. When the handles are let loose the spring between them brings the blades into apposition for re-use and introduction into the cervix. The blades curve upwards at the end, but not so much as in the ordinary uterine sound, and are rounded off, not bulbous.

They bear a shoulder 2 in. (5 cm.) from the end, not 2½ in. (6.3 cm.) as in a uterine sound. *Dr. Amand Routh,* 1914.

242. **Dolbeau's Perineal Dilator.**

(*Modified to Dilate Cervix.*)

This instrument has four whalebone blades $4\frac{1}{2}$ in. (11.4 cm.) long, terminating in a cone-shaped metal ferrule $\frac{7}{8}$ in. (2.2 cm.) long, which binds them together at their terminal end. The blades taper from the base, at which point they measure $\frac{3}{8}$ in. (95 cm.) to the end where they fit into the ferrule. The outer surface of each blade is convex and polished, the inner bears a triangular projection. The total length of the dilator is $5\frac{3}{8}$ in. (13.6 cm.), the point measures $\frac{7}{8}$ in. (2.2 cm.) in circumference. When closed the blades measure 2 in. (5 cm.), and when expanded $2\frac{3}{8}$ in. (6 cm.) in circumference. The lower ends of the blades are fixed in a steel ring which contains the mechanism for expanding them. This consists of a steel rod at the free end of which is a wedge-shaped block which, when driven forwards, rides over the triangular projections on the inner surface of the blades so as to press them outwards. The lower part of the steel rod bears a series of fixed rings cut into its surface, and fitted transversely to them is another steel rod $5\frac{1}{2}$ in. (14 cm.) long with a ratchet, bearing a 2 in. (5 cm.) chequered ivory cross handle. When this handle is turned it revolves the ratchet which works upon the fixed rings, and then the dilating rod with its wedge is driven forward, expanding the blades.

The donor of this dilator is not recorded.

The whalebone and the dilating mechanism was originally designed for Dolbeau's dilator for the neck of the male bladder in perineal lithotrity, and is figured in his work. "De la lithotritie perinéale, ou nouvelle manière d'opérer les calculeux" (Paris 1872), p. 46, Fig. 5. But Dolbeau figures a simpler instrument, the whalebone blades being expanded by the straight steel rod alone, the other rod, which works transversely and is so conspicuous in this sample, being absent. This instrument was apparently modified for gynæcological purposes, the transverse rod being more convenient for dilating the cervix already widened by tents and drawn down by a tenaculum. *Royal Society of Medicine.*

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243. **Coghlan's Uterine Dilator.**

"Savigny & Co." (see below).

Length 9 in. (22.8 cm.); length of blades from free end to lock $1\frac{1}{2}$ in. (3.8 cm.).

The blades are conical and somewhat pointed, springing from a shoulder on the handles immediately above the screw-joint, designed to prevent them from being thrust too far into the cervix. The handles are very long and bear an inner spring, thus giving leverage to the blades when expanded. A screw rod is fitted on to the lower end of the handles, with a running screw nut contrived

so as to stop the blade when opened at any desired degree of expansion. The lower halves of the handles have bevelled sides and are fluted outside, like many modern (1921) instruments.

Coghlan ("On Dysmenorrhœa and Sterility," *Med. Times and Gazette,* vol. i, 1862, p. 186), figures and describes this instrument. After incising the cervix with his probe-pointed metrotome preserved in this collection (No. 234), he introduced a coiled-up tube of thin sheet-lead and dilated it with long dressing forceps, but as the forceps did not prove satisfactory, he devised this instrument, which enabled him to introduce the leaden tube into the canal, dilate it and leave it there. The sheet of lead was wrapped tightly round the beak, trimmed, and passed into the cervix. The nut was unscrewed to the degree desired for expansion. Then the handles were pressed so that the blades opened and expanded the leaden tube to the desired extent. Lastly, the operator relaxed his grasp on the handles, the spring immediately closed the blades, and the instrument was withdrawn.

Presented to the Obstetrical Society of London with the two probe-pointed metrotomes (No. 234) marked "Savigny & Co., 67, St. James' Street, London." Date of presentation and name of donor not preserved.

The points of the blades are too sharp, so that this instrument would not be safe in the hands of a novice.

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244. **Graily Hewitt's Uterine Dilator.**

Length 10½ in. (26.6 cm.); of blades from free end to lock 7¾ in. (19.7 cm.). "S. Maw and Son, London."

This dilator, with parallel blades and screw-hinge, is of the type invented by Rigby in 1840, "the blades not being jointed at the end, but separating in their entire length, the separation being effected by a screw process at the handle." (Cat. Obstet. Soc., 1866, p. 53 and fig. 49). Graily Hewitt reduced the size of this type "used by the late Dr. Rigby" (Hewitt, "Pathology, Diagnosis and Treatment of the Diseases of Women," 4th Ed. 1882, pp. 197–8 and Figs. 48, 49). "The principle is not new, being that of a pair of glove-stretchers,[1] but the dilating blades are small and can be

[1] Heister's "dilator" was almost identical with a glove-stretcher, having no extra screw mechanism. It was made to supersede Marianus and Paré's formidable instrument employed in lithotomy by the apparatus major. See Heister, "General System of Surgery," 1743, Pl. xxviii, Fig. 8. Rigby's uterine dilator may be a direct modification of Heister's instrument.

introduced easily. After introduction, they are separated by a screw action, and very great force can be made to bear at the position where dilatation is most required, viz., the internal os." The dilator was used at intervals of two or more days in order to reduce the uterus and widen the cervical canal in cases of dysmenorrhœa, etc., ascribed to flexions. In Hewitt's (as in Rigby's) original pattern, the ends of the blades were bent like a uterine sound and bore a projection at the angle, and there was no spring btween the handles, but a peg was placed between the blades a little above the lock, to ensure accurate closure.

In this sample the blades gradually curve from the stem, and are not bent at the free end like a sound. It was probably modified for some special purpose. No dilator of this type was ever employed by Sir J. Y. or Sir A. R. Simpson. For a urethral dilator of the same type see No. 329. *Royal Society of Medicine.*

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245. **Goodell's Cervix Dilator.**

Length to handles 11 in. (28 cm.).

Handles covered with smooth ebony, $3\frac{1}{2}$ in. (8.8 cm.) long, bent almost at right angles to shaft; length from free end to screw-union joint of shaft 6 in. (15.24 cm.).

The blades, 2 in. (5.cm.) long are slightly curved and the sides are bluntly grooved to prevent slipping; their points when closed are 5 millimetres in diameter, and their base 9mm. The blades work with a parallel movement to effect which two straight bars cross each other X-wise and are hinged at their junction in the middle line, and at their four free points. The two upper points have pins working in slots immediately below the blades; whilst the two lower points are fixed into hinged joints in the shanks, $4\frac{1}{4}$ in. (10.7 cm.) below thepoints. Below the screw-union joint connecting the shanks a spring is placed between the shanks to keep the blades closed.

A screw-rack passes through the handles marked in millimetre scale, showing the degree to which the blades are expanded. It is regulated by a wide flattened thumb-screw.

There are several patterns of the instrument known as Goodell's dilator: (1) dilator with straight handles and finger-rings, long, smooth blades with bulbed ends, and simple screw-movements; (2) dilator with spring-rack and curved handles bearing finger-rings, and blades smooth with bulbed ends; (3) the dilator here preserved and a variety with fluted metal handles and blades with prism-shaped projections and another variety with simple handles bearing finger-rings. Palmer's dilator isvery similar to Goodell's.

Goodell himself (" Lessons in Gynæcology," 3rd Ed., Philadelphia, 1887) figures this instrument, a sample of the type here exhibited, in his chapter on " Rapid Dilatation for the Treatment of Painful Menstruation and Sterility from Flexion." " The instruments which I use are two modified Ellinger's dilators of different sizes . . . . Ellinger's model is the best on account of the parallel action of the blades which dilates the whole track of the canal uniformly. The lighter instrument needs only a ratchet in the handles, but the stronger one should have a screw by which the handles are brought together. Lest the beak should hit the fundus uteri and seriously injure it when these instruments are opened, their blades are made no longer than two inches, and are armed with a shoulder which prevents further penetration. The larger instrument opens to an outside width of one and a half inches and its blades are roughened or corrugated by shallow grooves in order to keep them from slipping out. This dilator has also a graduated arc in the handles by which the divergence of the blades can be read off."

Penrose Williams, Esq., 1912.

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246. **More Madden's Uterine Dilator.**

Length 11½ in. (29.2 cm.); the wooden handle is 5 in. (12.7 cm.) long. "Arnold & Sons, London."

This dilator consists of two bars mounted on a handle. One bar is straight, and bears a deep groove in front. The other bar is bent, as in Simpson's metrotome, at an obtuse angle in its middle where it is connected with the straight bar by a screw fulcrum joint. The portion of the bent bar above the joint lies in the groove in the straight bar, and ends in a blunt conical point; while the portion below the joint ends in a thumb ring and is connected with the handle by a rack, with a screw adjustment. The rack bears a scale in quarter inches. The upper end of the dilator being introduced into the uterus, with the two bars closed, their points are separated by means of the screw adjustment " to their full extent (that is, one inch and a quarter, and then not reducible by any external pressure to less than three-quarters of an inch)." The expanded blades are withdrawn " forcibly through the canal, so as to expand the canal in the natural direction from within downwards and outwards, and not, as most other dilators, which act in the opposite direction." Then the dilator is re-introduced and the manœuvre repeated in opposite directions, until the passage is so expanded that the operator's finger can be readily passed into the uterine cavity, which is then thoroughly washed out with a hot carbolized injection.

See More Madden "On the Treatment of Sterility in Women," *Brit. Med. Journ.*, vol. i, 1888, p. 844, sentences from which are quoted above. In mechanism it resembles, in most points, Le Page's deep abscess dilator. *Penrose Williams, Esq.*, 1912.

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247. **Brissez's Intra-Uterine Speculum.**

Length 11 in. (28 cm.); handle (ivory) 3 in. (7.6 cm.) long, blades of speculum $1\frac{1}{2}$ in. (3.8 cm.); the remainder consists of the metal stem. "Windler."

In this instrument the essential portion is shaped as in Barnes' uterine speculum and somewhat similarly placed on the stem. But both the speculum and stem are divided into two parts, and by revolving from left to right a screw head with two spokes at the end of the handle, the stem expands, by a mechanism similar to that in Priestley's dilator, and parts the two blades of the speculum.

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248. **Wooden Intra-Uterine Stems.**

(1866.)

A perfectly rigid solid stem $2\frac{1}{4}$ in. (5.7 cm.) long, running from a flat truncated oval base, over 1 in. (2.5 cm.) in vertical, and 1 in. (2.5 cm.) transverse measurement, cut straight where it joins the stem. The straight part of the base was made to lie across the os externum, the flat surfaces locking antero-posteriorly.

A second stem has been lost, having broken off its base, which alone is preserved. *Royal Society of Medicine.*

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249. **Lazarewitch's Uterine Stems.**

Four stems made of some preparation of rubber, each about 2 in. (5 cm.) long, but differing slightly in length and calibre. They are solid, practically rigid, and spirally twisted to facilitate introduction. The base, made to lie against the os externum, is thick and oval.

Preserved in the Museum of the Obstetrical Society with label "Intra-uterine Pessary of Prof. Lazarewitch, Kharkoff, Russia."

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250. **Greenhalgh-Bantock's Intra-Uterine Stem and Introducer.**

Stem $2\frac{1}{4}$ in. (5.7 cm.) long, the metal wings about $1\frac{1}{2}$ in. (2.8 cm.). Introducer 7 in. (17.7 cm.) long, mounted on a flat chequered wooden handle $2\frac{1}{2}$ in. (6.3 cm.) long.

This stem consists of a tubular piece of ebony, expanded in the middle, and ending below in a disc $\frac{3}{4}$ in. (2 cm.) in diameter.

A piece of elastic metal, slit so as to form two wings, is fixed into the wood above. Each wing bears a small metal knob at its free extremity, turned inwards at a right angle, one knob fits under its fellow when the wings, which are of unequal lengths, are closed, and the two knobs bear a vertical perforation. The metal introducer, or stylet, bent at an obtuse angle at its extremity like a uterine sound, is passed through the tubular wooden portion of the stem, and, the wings being pressed together, one point of the stylet is pushed into the perforation in the knobs at their extremity. The stem being passed along the canal of the cervix to the requisite depth, the stylet is withdrawn, the wings spring out within the cavity of the uterus, the os internum grasps the instrument at its bifurcation, and the disk on the lower end rests against the os tincæ. The cervix must be previously incised, or dilated by sponge or sea-tangle tents.

This instrument is described and figured in Marion Sims' "Clinical Notes on Uterine Surgery," 1866, p. 404, and Fig. 142. He rightly ascribes it to Dr. Greenhalgh, Obstetric Physician to St. Bartholomew's and the Samaritan Free Hospitals, and states that its advantage over the older type of stem is that, being tubular, it allows the secretions from the cavity of the uterus to pass through it, and it is self-retaining. Sims admits, however, that some patients, in his own experience, could not tolerate its presence for a moment. Dr. G. Granville Bantock, a colleague of Dr. Greenhalgh's at the Samaritan Free Hospital, made some trifling modifications, increasing the constriction above the disk, which bears a mark indicating the side of the stem which should be passed uppermost. *W. Dunnett Spanton, Esq.*, 1914.

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251. **Spanton's Silver Stem.**

The portion to be introduced into the cervical canal is $1\frac{7}{8}$ in. (4.75 cm.) long and slightly curved. It is neither a tube nor a solid cylinder, but is deeply grooved anteriorly, like a director. The lower end is flattened out forming an oval piece of metal, slightly concave below, 1 in. (2.5 cm.) in transverse and $\frac{3}{4}$ in. (2 cm.) in antero-posterior measurement, made to lie against the posterior lip of the cervix, projecting into the posterior fornix. The groove in the stem opens on to the anterior part of the edge of the oval piece of metal, and is also open at the free upper end of the stem.

The inventor made use of this stem "after dilatation or division of the cervix uteri for stenosis, objecting to any solid material. It answers well and usually remains in place long enough without any help. It is also aseptic" (M.S. inventor).

W. Dunnett Spanton, Esq., 1912.

252. Savage's Intra-Uterine Stem Pessary.

It consists of two parts :—

(1) A Hodge's vulcanite pessary covered with Para rubber, having a disk about $1\frac{1}{2}$ in. (3.8 cm.) long, running between the middle portion of its bars. This disk has a perforation in its centre, through which passed a perforated and bulbed vulcanite stem $2\frac{1}{2}$ in. (6.3 cm.) long.

(2) A wire frame made to be moulded into the vagina terminating in a flattened metal stem $2\frac{1}{2}$ in. (6.3 cm.) long, bearing the normal curve of the cervix.

The frame and metal stem were applied first, the patient being kept in bed for about a week till the uterus had (apparently) regained its natural position. Then the vulcanite instrument was introduced and worn under normal conditions. The rubber disk allowed of a certain amount of natural automatic movement.

Several gynæcologists advocated the use of the stem pessary in conjunction with the vaginal pessary (Hewitt, "Diseases of Women," 4th ed., 1882, p. 211 and fig. 67).

This instrument was presented to the Museum of the Obstetrical Society by the inventor, Dr. Henry Savage, Physician to the Samaritan Free Hospital. *Royal Society of Medicine.*

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253. Duffin's Pessary.

The supporting portion is a shallow cup of hollow boxwood, the cupped portion is $1\frac{3}{4}$ in. (4.4 cm.) in diameter, the sides of the cup, very convex, measure $2\frac{1}{4}$ in. (5.7 cm.) in their widest diameter. The cupped portion bears 4, and the sides 12 perforations. The boxwood cup is fitted into a stout ivory stem $1\frac{1}{2}$ in. (3.8 cm.) long and $\frac{3}{8}$ in. (0.9 cm.) in diameter at its lower and thinner portion. This stem is threaded for a female screw. A hollow ivory male screw, $1\frac{1}{4}$ in. (3.17 cm.) long, fits above into the ivory stem, ending below in a ball which is fitted into an ivory cup about $\frac{3}{4}$ in. (2 cm.) in diameter. This cup, also hollow and opening below, fits into a thin oval wooden plate or shield $3\frac{3}{4}$ in. (9.5 cm.) long, $1\frac{1}{2}$ in. (3.8 cm.) at its broadest portion, which is that around the cup and ball. Anteriorly it is narrower.

The prolapsed parts being reduced, the wooden cup was introduced and placed against the cervix. By means of the screw, the ivory stem could be adjusted to the desired length. The ball-and-socket motion enabled the internal portion to adjust itself to the attitude and movement of the patient when sitting or walking. The holes in the wooden cup allowed the discharges to pass through the ivory stem and cup. The shield conformed to the movement of the ball-and-socket. After the introduction of the pessary, the patient wore an ordinary diaper. Three sizes of this instrument were

stocked in hospital surgeries. The wooden cup, notwithstanding the perforations, was apt to retain secretions, and, unless made of good wood, to split. This pessary was popular with patients in the middle of the 19th century, and proved very comfortable to old labouring women with procidentia. The supporting portion was originally made flat, then slightly concave, and lastly in this, the third modification, holes were drilled for drainage. The pessary was originally made by a dealer, Flack, of Clerkenwell. See also Nos. 254, 255, 256. For the original account of this instrument see "Description of a new Shield Pessary," by E. W. Duffin, F.R.C.S. (*sic.*), *London Medical Gazette*, vol. vii (1830–31), p. 807, with drawing of the pessary entire and in section. It is a modification of the French cup-and-ball pessary. *Royal Society of Medicine.*

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254. **Air-Cushion Pessary for Prolapsus**

The supporting portion or cushion and stem are mushroom shaped, and, like the shield, entirely made of rubber. The cushion is $2\frac{1}{4}$ in. (5.7 cm.) in diameter, and convex on its upper surface. The stem is only $1\frac{1}{2}$ in. (3.8 cm.) long, but $\frac{3}{4}$ in. (2 cm.) in diameter, and hollow. It fits into a shield, oval, 3 in. (7.6 cm.) long, shaped like the wooden shield in Duffin's pessary but hollow and full of air, like the cushion above. The channel of the stem opens on the inferior surface of the shield, to allow of the introduction of a sound, when the pessary is applied.

Presented to the Obstetrical Society of London, date and donor not recorded. Though most faulty in principle and impossible to keep clean, many patterns of this type (Priestley's, etc.) were freely used in the third quarter of the nineteenth century.

Royal Society of Medicine.

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255. **Ivory Pessary: After Duffin.**

(H. 16, Old Cat., R.C.S. Museum, labelled "A modification of Duffin's Pessary in ivory, with a flat instead of an egg-shaped surface.")

The supporting portion is an ivory disk, flat, with a raised and thickened border. It measures $2\frac{1}{4}$ in. (5.7 cm.) in diameter, and is perforated in the middle by an aperture of which the diameter is $\frac{5}{8}$ in. (1.5 cm.). On its under-surface the disk has three limbs $1\frac{1}{8}$ in. (2.8 cm.) long, joining together in the middle line 1 in. (2.5 cm.) below the aperture in the disk. The ivory at the point of junction is perforated, bearing a female screw into which is fitted the stem. This stem is straight and measures (the male screw above and the ball below not included) $1\frac{3}{4}$ in. (4.4 cm.), at its upper portion it is about $\frac{5}{8}$ in. (0.9 cm.) in diameter, lessening to about $\frac{1}{4}$ in. (0.6 cm.) at its lower end which is diated into a ball. The cup

is a highly finished piece of ivory, flat on its lower surface which bears perforations for silks to attach it to its shield or napkin.

This instrument is entirely made of ivory. The disk is marked (in ink) "354," but the name of the donor has not been preserved.

Donor Unknown.

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256. **Metal Cup-and-Ball Pessary.**

A German-silver pessary consisting of a thin ring $1\frac{1}{4}$ in. (3.17 cm.) in diameter, from which run downwards three thin bars $2\frac{3}{4}$ in. (7 cm.) which unite below in a ball. This ball fits into a button-like cup $\frac{5}{8}$ in. (1.5 cm.) in diameter. There is no shield; the pessary was retained by the support of an ordinary diaper without any stitching or fixing.

(Several pessaries of this pattern were made and used in the middle of the nineteenth century.)

Presented to the Obstetrical Society of London, date of presentation and name of donor not preserved.

Royal Society of Medicine.

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257. **Evans and Wormull's Metallic Globular Pessary**

Weight 10 drachms (17.7 grms.); diameter 2 in. (5 cm.).

A hollow metal ball, with a stem $1\frac{1}{2}$ in. (3.8 cm.) long; partly a tubular prolongation of the ball, partly a slender, slightly curved bar of metal fitting into the tube by a cup and ball mechanism. A chain is attached to the lower end of the stem to facilitate extraction.

The donor wrote (April 1912): "The pessary (globular) was made about forty years ago by Evans and Wormull, London, from some idea of their own for me to try, so I kept it as a curiosity. Their idea was to replace the globular boxwood pessary then in

W. D. Spanton, Esq.

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258. **Flat Boxwood Pessaries** (1860).

A set of six, varying in diameter from $2\frac{1}{2}$ in. (6.3 cm.) to $3\frac{1}{4}$ in. (8.2 cm.).

All made of thin boxwood with thick elevated rim and a hole in the middle $\frac{1}{2}$ in. (1.27 cm.) in diameter.

The donor came into possession of these instruments in 1860 when they were in common use. *W. D. Spanton.*

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259. **Zwanck's Pessary.**

(*Screw on Stem.*)

An old-fashioned variety of an instrument still (1921) in use. It is made of wood, the wings are fenestrated, and open and close on a hinge, as in the more modern type. By turning an octagonal handle attached to the free end of the stem the wings are moved, a wire running between each wing and the handle. Several modifi-

cations of the screw mechanism were devised, but this is one of the earliest. In 1866 Marion Sims wrote: "I have seen Zwang's (*sic*) pessary sever the urethra from the neck of the bladder, cutting quite down to the vesical membrane, but not through it." ("Clinical Notes on Uterine Surgery," p. 270.) Several contrivances, including this variety, were invented to replace the older form, where the stem consisted of two metal bars fixed together with a cap at their free ends, when the wings were opened, but the older type, with the bars guarded has remained the most popular. The inventor was J. H. G. Zwanck (1783—1829).

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260. **Hodge's Pessary (Metal).**

A small sample of Hodge's still (1921) widely used pessary, made of block-tin softened by the addition of a little lead; long diameter 2½ in. (6.35 cm.).

Professor Hugh L. Hodge, of Philadelphia, invented this instrument. That gynæcologist strongly advocated the use of a lever pessary during pregnancy. "For many years past, after having tried the usual modes of treatment, the author has relied exclusively on the lever pessary, both as an 'elevator' of the displaced uterus, and also as a supporter to retain it in its proper position. The great peculiarity of the lever pessary is its being curved so as to correspond with the concavity of the sacrum and perineum. The upper extremity is carefully directed against the *cul-de-sac* of the vagina, and pressed steadily but firmly between the uterus and the rectum so as not to impinge against the uterus, or produce any pain or irritation. When the vagina is sufficiently elongated, the finger of the practitioner, acting upon the lower extremity of the pessary, depresses it toward the perineum, and, of course, causes the elevation of the upper or sacral extremity which is opposed to the fundus uteri, thus using the instrument as a lever." ("Principles and Practice of Obstetrics," 1864, p. 416, with woodcut of "Hodge's Lever Pessary.")

Hodge's pessary was originally made of silver, and shaped like a letter U, with the two parallel branches curved on the flat to suit the curvature of the vagina. Hodge modified his instrument for an anteversion by placing a cross-bar on its front, or open end, thus closing it up entirely, making a sort of sigmoid parallelogram. By 1850, when gynæcologists knew that not only could it be easily removed for cleaning and replaced, but that, unlike other pessaries then in use, it was no obstacle to coitus and impregnation, Hodge's pessary became popular. See Marion Sims, "Clinical Notes on Uterine Surgery," 1866, p. 273, *et sec.* for the early history of this kind of uterine support.

Labelled "Metal Pessary, Hodge's," when in the Museum of the Obstetrical Society, with no donor's name.

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261. **E. R. Peaslee's Vaginal Depressor.**

Length $6\frac{3}{4}$ in. (17.1 cm.); straight portion of stem $4\frac{1}{2}$ in. (11.4 cm.); each prong $\frac{3}{4}$ in. (2 cm.).

Nickel-plated steel, stem perfectly straight, terminating in two prongs like a letter Y; each prong is distinctly curved forwards, and its extremity is blunt. The lower part of the stem is continued into a flattened leaf-like handle, bent backwards.

This instrument was labelled "Byrne's Fixator," in the Museum of the Obstetrical Society. Dr. J. Byrne, of Brooklyn, described and figures his fixator in a paper, "A Remarkable Case of Prolapsus Uteri" of 18 years' standing successfully treated by Elytrorrhaphia," *Amer. Journ. Obstet.*, vol. i, 1868–9, p. 327, figs. 3 and 4. It had a wooden handle and a curved stem, the prongs were straight and there were two small sharp points at the base of the fork. Byrne used it to keep the uterus steady by placing the fork against the anterior surface of the cervix and holding the stem against the denuded area on the anterior vaginal wall until the sutures were ready to be tied.

This instrument, far too short to be conveniently applied and held in the manner described by Byrne, is known in the trade as E. R. Peaslee's vaginal depressor, but is not mentioned in Peaslee's standard work. It was probably suggested by tongue tractors and spatulas but the fork was no doubt imitated from Byrne's fixator and served to keep the cervix in position, as desired, during examinations. (The "fixator" alluded to above must also not be confounded with Byrne's "repositor for inverted uterus," described in the *New York Medical Journal*, vol. 28, pp. 370, 390. See notes under description of No. 265).

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262. **Sims' Double Uterine Depressor.**

Length 10 in. (25.4 cm.), inclusive of rings at each extremity.

"W. Matthews, London."

A nickel-plated steel bar, with a ring at each end, broadest at its free extremity. The fenestra of the larger ring measures $1\frac{1}{8}$ in. (2.8 cm.) long by $\frac{7}{8}$ in. (2.2 cm.) broad; that of the lesser $\frac{3}{4}$ in. (2 cm.) long by $\frac{1}{2}$ in. (1.27 cm.) broad. The rings are thin, flattened, and their surfaces are deeply grooved transversely on both sides; each is bent at an obtuse angle to the bar, and on the opposite side to its fellow.

Marion Sims, in "Clinical Notes on Uterine Surgery," 1866,

p. 25, after explaining the use of the tenaculum in uterine examination when the vagina is narrow and the uterus anteverted, adds: "Another plan of bringing the os tincæ into view is to draw the neck forwards by pressure in (*sic*) the anterior *cul-de-sac* with this instrument which I call the uterine depressor." He figures a single instrument mounted on a wooden handle, copied in the Cat. Obstet. Soc., 1866, p. 131, Fig. 126. This instrument is known to many dealers as Sims' Vaginal Depressor, but the above quotation shows that "Vaginal" is inaccurate.

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263. **Marion Sims' Uterine Elevator (I).**

The stem is 2 in. (5 cm.) long and mounted on a tubular metal shaft 7 in. (17.7 cm.) long, which is fixed to an ebony handle $3\frac{1}{2}$ in. (8.8 cm.) in length.

The uterine stem is set at an angle of 45°, "being the proper angle for an ordinary retroversion." It is fitted into "a ball or disk for the support of the weight of the uterus"; it revolves on its own axis in a line with the shaft, permitting the stem to describe a whole circle except 90°—45° on each side of the shaft. This ball is perforated with seven holes (the stem occupying the eighth) made in a line around its centre, for the reception of a pointed rod, concealed in the tubular shaft which is pulled down by the ring and flies back again when we let the ring go, so that the movements of the uterine stem can be promptly arrested at any desired point in its elevation, simply by letting go the ring, which, with the rod, is driven up by a hidden spring in the handle below. The little perforations in the ball are placed intentionally at the proper distances to mark off angles of 45° in the revolutions of the stem." Cat. Obstet. Soc., 1866, p. 130, and Fig. 125.

Marion Sims himself owns that "this instrument is simply a Simpson's sound with a joint or hinge two inches from its uterine extremity; but its *modus operandi* is very different." It elevates the retroverted fundus in a straight line instead of a circle. See the inventor's "Clinical Notes on Uterine Surgery," 1866, pp. 264 to 268, and Figs. 105, 106. *Royal Society of Medicine.*

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264. **Marion Sims' Uterine Elevator (II).**

The stem is $2\frac{5}{8}$ in. (6.6 cm.) long, and mounted on a tubular metal shaft $8\frac{1}{2}$ in. (21.5 cm.), fixed to an ebony handle $3\frac{1}{2}$ in. (8.8 cm.) long. "Maw."

A similar instrument to No. 263, but much larger, the stem and shaft are proportionately longer, whilst the handle is of the same length as in No. 263. *Messrs. Maw, Son and Sons,* 1914.

265. **Alfred Smith's Uterine Repositor.**

Length (not by curve) $13\frac{1}{2}$ in. (34.3 cm.); breadth of head, across tips 2 in. (5 cm.); length of handle $4\frac{1}{4}$ in. (11.4 cm.); the rest of the instrument is the stem which is $\frac{3}{8}$ in. (0.9 cm.) in diameter, and uniformly cylindrical; the concentric head is almost uniformly cylindrical $\frac{3}{4}$ in. (2 cm.) in diameter, but slightly narrower at the tips; weight $9\frac{3}{4}$ oz. (276.5 grms.); of head, separate, $2\frac{1}{4}$ oz. (64 grms.).

Maker: "Fannin, Dublin."

Professor Alfred Smith, of Dublin, caused this repositor to be constructed when Assistant Master of the Rotunda 1886—1889; the design was obtained from an old Arnold's catalogue, and the instrument was used to reduce backward displaced uteri in very fat patients. Macan, introducing Schultz's bimanual method of reducing the uterus, found it very difficult to carry out when the parietes were loaded with fat and the repositor was introduced. Anæsthetics were not employed so freely in 1886 for reduction of displacements as they were in later years. The uterus was replaced by the repositor before the pessary was applied. This sample was exhibited at the Birmingham meeting of the British Medical Association in 1890 (note on Programme of Meeting, *Brit. Med. Journ.*, vol. ii, 1890, p. 242, "Dr. Smith will show the instrument he uses in elevating the uterus during massage for prolapse"). It was exhibited, but the accompanying notes, on the manipulative treatment of backward displacements, were never published.

Both the head, which can be screwed off, and the remainder of the instrument are made of hollow nickel-plated steel.

This instrument differs in construction from Byrne's Repositor. See "Acute Inversion of the Uterus: a new instrument successfully employed in its reduction," *New York Med. Journ.*, vol. 28 (1878), p. 370 and "Description of a Companion Instrument to the Uterine Repositor," *ib.*, p. 590. See also notes under description of Peaslee's Vaginal Depressor, No. 261.

Professor Alfred Smith, Dublin, 1914.

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266. **Speculum Matricis, 16th Century.**

This instrument weighs 14 oz. (397 grms.), and is made of steel apparently hand-forged and finished; it is $7\frac{1}{2}$ in. (19 cm.) in length.

It bears three blades, each $3\frac{1}{4}$ in. (6.2 cm.) long, convex on their outer surfaces, tapering to a somewhat sharp point. The inner surfaces are prism-shaped, so that all three blades may be brought into perfect apposition when closed, and quite firm, fit in fact for introduction into the vagina.

The two lateral blades are attached at right angles to a flat side-bar, each bar curves outwards and then sharply downwards to join its fellow below, where the two are united by a single or pin-joint.

They form a shoulder above 3½in. (6.9 cm.) broad when the blades are closed and give a pear-shaped outline to the instrument. The third, middle, or lower blade is joined at right angles to a flat, cross-shaped piece of steel. The cross-bar forms a pair of wings looped so as to travel over the outside curved bars, while to the vertical bar of the cross two bearings are affixed, the upper to receive the revolving head of the screw, the lower to carry the female screw. A third bearing is fixed immediately above the single joint which unites the lower ends of the outside bars. A male screw passes through these several bearings, and is worked by a winch, the shaft of which is 1¾ in. (4.4 cm.) and the handle 2¾ in. (7 cm.) long, so that the blades may be opened or closed as desired.

In the Cat. Obstet. Soc., 1866, this same speculum is entered in the list of instruments presented to the Society Museum, p. 229, as "*Speculum,* Antique, Prof. Breslau," and described at p. 195.

"A very curious variety of the trivalve speculum, exhibited by Professor *Breslau,* of Zurich. It is one of the terrible but historically curious specimens described and illustrated in the now rare book of F. (*sic*) Rueff, "Ein schön lustig Trostbüchle von den empfengknussen und geburten der menschen vnnd jren vilfältigen zufälen und verhindernussen." (Corrected from the quotation, which was inaccurate.) Zurich, 1554, Frankfurt a/M, 1580. Rueff lived in the middle of the sixteenth century, and his book, translated in several languages, was one of the first concerning the obstetrical art.

"The blades of this instrument are pointed, three inches long, and spring at right angles from the handle, which is heart-shaped and has a long screw running through its centre; this screw, attached to the blades, is turned by another handle similar in construction and movement to those used in the common street organs. Dr. Breslau writes to us as follows: 'Eight years ago I bought this iron instrument from an antiquary who had received it as a legacy from a physician, and, I believe, judging from its form and construction, that it is an original one. I shall be most happy if the Obstetrical Society of London would not only take an interest in this specimen of mediæval obstetrical cruelty, but more if they deem it worthy of a place in their collection.' The instrument is accordingly in our Museum."

This instrument is not a "speculum" in the modern sense of the word, but a dilator of the vagina to be used when the midwife desired to extract a dead child, if she preferred this *speculum matricis* to Rueff's *Apertorium*. "The turning joynt must be turned so often about, till you shall understand it sufficiently for dilatation and enlarging of those parts. And the orifice or entrance of the matrix being enlarged by that means, let the midwife take hold of

the infant gently with her hands, and, if it be possible, bring him forth with the Secundines." "Rueff's Expert Midwife," 1637, p. 106, translated from Rueff's "De Conceptu et Generatione Hominis," Zurich, 1554, p. 30. Breslau (*vide supra*) gives the title of his German edition. This speculum closely resembles the three-bladed instrument from Pompeii, of which a facsimile is preserved in the Museum of the College, whilst Scultetus' "Speculum Matricis" is a link between this instrument and Weiss' three-bladed dilator (No. 267).

See A. Doran, "Speculum Matricis," *Journ. Obstet. and Gyn. Brit. Emp.*, vol. xxvi, 1914, p. 129. *Royal Society of Medicine.*

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267. **Weiss's Three-Bladed Speculum or Dilator.**

Blades $4\frac{1}{2}$ in. (11.4 cm.) long, $\frac{1}{2}$ i.n (1.2 cm.) broad at free end, $\frac{5}{8}$ in. (1.5 cm.) at handle end. Handle and screw apparatus $7\frac{1}{2}$ in. (17.7 cm.); handle alone $4\frac{3}{4}$ in. (12.1 cm.). "Weiss, London."

A three-bladed nickel-plated instrument, the screw apparatus and handle (which is of ebony, four-sided, front and back chequered) are at right angles to the blades.

The handle bears a screw attached above to the wedge-shaped end of the lower blade. Each lateral blade ends in a bar which passes downwards, terminating in a screw joint just above the handle. When the handle is turned from left to right the lower blade is drawn down by the screw, while the lateral blades are pushed outwards, travelling along the plane formed by the bars passing along a piece of steel which keeps apart the two plates of metal forming the wedge-shaped end of the lower blade. When the handle is turned from right to left the blades come together again.

The plug is made of vulcanite, in three pieces connected by screws, the free end projects half an inch (1.2 cm.) beyond the blades when they are closed.

This dilator is really Scultetus' ancient instrument ("Armamentarium Chirurgiæ" (1672), Pl. xvii, Fig. 4) with an ingenious mechanism. The plug was devised to prevent the mucous membrane from falling between the blades. When made, as in earlier patterns, of wood, plugs were liable to expand when damp and lock the blades. Then they were made in segments so that they might the more easily be released, and vulcanite was substituted for wood. Later, a simple stout wire union between the handle of the plug and its free end was contrived, and is still used by some gynæcologists for a urethral dilator of this type, though others dispense with the plug altogether, withdrawing the blades when expanded.

This instrument was devised for uterine and rectal work, whilst

a smaller dilator, of the same pattern and mechanism still favoured by some operators, served for exploration of the bladder, and is known as Weiss' three-bladed urethral dilator. See note to No. 268, and also No. 337. "Case, containing Vaginal, Urethral and Rectal Specula, *circ.* 1840," where the vaginal and urethral dilators are of the same mechanism, but their plugs are wooden. This instrument was slowly developed from the Roman pattern and Rueff's type (No. 266), where three or four prong-like blades expanded from a common point by means of a screw action. The blades were made wider and the screw mechanism altered in detail and numerous variations devised, but Weiss' type remains the most distinct. A "Uterus Dilator" of Weiss' type with prong-like blades was still in use late in the nineteenth century, but like this vaginal speculum, similar in mechanism, it has become obsolete. *Sir Francis Champneys, Bt.*, 1913.

(a) *Four blades, handles and plug.*

268. **David Davis's Four-Bladed Speculum.**

Blades 6 in. (15.2 cm.) long, very narrow, about $\frac{5}{8}$ in. (1.5 cm.) at upper end. "Weldon, London."

Described in Cat. Obstet. Soc., 1866, p. 193. "Dr. David Davis, 1830; exhibited by Dr. Hall Davis. The upper and lower blades overlap and embrace the lateral ones; they are simultaneously opened by closing or drawing together the handles, between which a screw is placed to regulate the desired amount of separation of the blades. A chain, 5 in. (12.7 cm.) long, is fastened to the extremity of each handle, and by holding this the patient can retain the instrument *in situ*, should the operator otherwise require the use of both hands."

There is also a large wooden plug, the head of which is separate and cut especially so as to keep apart the lower ends of the upper and lower blades; it runs on a threaded bar bearing a nut to fix it at the desired point. When the four blades are fully apart at their lower end, they are closest together at their opposite extremity, forming a circle about $\frac{1}{2}$ in. (1.2 cm.) in diameter, the spherical extremity of the plug protruding beyond them. On withdrawing the plug the blades can be expanded, to a degree indicated on the screw between the handles. A travelling nut serves to fix the handles when desired. The handles about 4 in. (10.16 cm.) long, are bent downwards and considerably backwards, and are lined with chequered ebony.

An earlier type of this speculum, without the chain, is figured in David Davis's "Principles and Practice of Obstetric Mediicne," 1836, Atlas, Pl. xi c., Figs. 3, 4 and 5, and described as "a modification of Ricord's instrument. Instead, however, of being two-

sided, like his, it has four sides, but it is constructed with that difference essentially on the same principle." The plug is not present in this early type of David Davis's speculum and there is no chain, but the handles were detachable.

(In David Davis's "Atlas," Pl. xi b., Fig. 3, a three-bladed "speculum matricis" is figured; it resembles Weiss' instrument, No. 267, and a sample will be found in the case, No. 337, in this collection. Davis uses "speculum" (vaginal) and "speculum matricis" synonymously in his "Atlas.")

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269. **Charrière's or "American" Four-Bladed Speculum.**

Brass blades $5\frac{1}{2}$ in. (14 cm.) long, lessening in breadth considerably towards the free ends. Handles 4 in. (10.16 cm.) long, curved considerably backwards and coated outside with grooved ivory. Each handle runs on to a lateral blade, the two blades swinging outwards and inwards on a hinge $1\frac{1}{2}$ in. (3.8 cm.) above the handles, fixed to their inner contiguous borders, when the handles are parted or brought together. The handles bear a rack and pinion a little below the blades, which can be released by pressing down the spring finger-rests just at their junction with the handles; this allows a turn-pin in a slot on each side of the hinge inside the speculum to be moved so that the blades may be detached. When introduced, the ivory plug with an oval convex projection at the end was passed into the space between the blades. A spot on its handle indicates that the long axis of the oval free extremity lies vertically, like that of the free end of the blades when they are closed. Above the circular ivory plate on the plug which fits the lower end of the speculum two steel springs project from the stem of the plug to keep it steady until the blades are opened. This instrument greatly resembles "Dr. Récamier's speculum" figured in David Davis's "Principles and Practice of Obstetric Medicine," 1836, Atlas, Pl. xi, c., Fig. 3, but no plug is represented in that drawing. *Royal Society of Medicine.*

(b) *Four blades, no handles, no plug.*

270. **Beaumont's Speculum.**

It consists of two crescent-shaped flat bars $\frac{1}{2}$ in. (1.2 cm.) wide and four steel silver-plated blades, each $2\frac{3}{4}$ in. (7 cm.) long and $\frac{3}{4}$ in. (2 cm.) wide at the base, tapering to $\frac{5}{8}$ in. (1.5 cm.) at the free end, where it is finished off with a round beading $\frac{1}{8}$ in. (0.3 cm.) in diameter. Two of the blades are hinged to each crescent-shaped bar. The lower end of each blade terminates in a right-angled block which rests upon the head of a screw attached to the crescent-

shaped bar. On the bar is fixed a block carrying the female thread passing through which is a steel screw terminating in a square block end, on to which the key, preserved with the instrument, is fitted. By turning the key from left to right the screw is pressed forward against the block on the blade, thus tilting it backwards, so as to effect dilatation.

The two crescent-shaped bars carrying the blades are joined by a hinge, and on the left half is affixed a mount carrying a screw similar to the four which are connected with the blades. By applying the key, this screw is made to press against the right bar, and to act as a stop, or, if required, to increase the dilatation.

A complicated mechanical arrangement devised to obtain a simple result. (See notes to Beaumont's Polypus Snare, Nos. 199 to 201.) One peculiarity is ingenious, one or more of the blades may be turned back, so as to allow of the exposure of a fistula or application of dressings.

"BEAUMONT'S (Speculum) of Toronto was exhibited by FERGUSON. This instrument has a horse-shoe base from which five blades slide at right angles; each blade is four inches long and ½ inch wide; they each have a screw which regulates their opening, each blade having to be opened separately." Cat. Obstet. Soc., 1866, p. 202.

Dr. Beaumont, before he left London for Canada, published in the *London Medical Gazette,* vol. xx, p. 122 (April 22nd, 1837), a description of a "New Speculum Vaginæ" which he had constructed to aid in operating on vesico-vaginal and recto-vaginal fistulæ, "though it may be equally useful in examining and operating on the vagina in other cases." It consisted of five steel blades, each 3 inches long, fixed around two-thirds of a hemisphere of rather more than one inch in diameter with a screw in its centre worked by a handle passing within the blades. A string passed through a hole near the free extremity of each blade and its free ends were fastened to a peg on the handle, the blades being drawn together. The speculum was introduced and the string was then raised from the peg, the blades suffered to expand, and the handle unscrewed. Between the blades nearly one-third of the vagina was exposed, the side of the fistula could thus be brought well into view. The instrument here preserved is evidently a development of the older speculum described above (and figured in the original report). The hemisphere, a metal cup convex externally, is omitted and the screw mechanism altered, so that the cervix can be exposed. The sample with longer blades exhibited in 1866 was no doubt made for vaginal fistulæ, whilst this sample was constructed for rectal fistulæ, to which Beaumont directly refers.

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(c) *Three blades, handles and plug.*

271. **Récamier-Ségalas' Trivalve Vaginal Speculum.**

Length of blades 6 in. (15.24 cm.); breadth at free and slightly narrower end $1\frac{1}{4}$ in. (3.17 cm.); the third blade 1 in. (2.5 cm.); diameter at free end fully expanded co-apted valves $1\frac{1}{2}$ in. (3.8 cm.).

Two valves bear a handle, about 2 in. (5 cm.) long, directed downwards, with a rack and a travelling screw to open and fix them. To the right valve the third valve is hinged. This speculum, usually ascribed to Récamier but sometimes to Ségalas, bears a wooden plug. *Royal Society of Medicine.*

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272. **Ségalas-Simpson's Three-Bladed Speculum.**

Blades $5\frac{1}{4}$ in. (13.3 cm.) long, and $1\frac{3}{4}$ in. (4.4 cm.) broad at the upper end.

The blades, when closed, form, at the upper extremity, an oval $1\frac{3}{4}$ in. (4.4 cm.) by 1 in. (2.5 cm.) from which protrudes the ebony plug; this arrangements facilitates introduction. At their lower extremity a handle (jointed so that it may be turned in for convenience in packing) is fixed to two of the blades; this handle is a stout metallic bar curved outwards. The two handles, when pressed together, expand the blades and then the plug can be removed by turning the knob on its lower end until the white spot which it bears is in a line with the cone-shaped mount on the outer side of the third blade. The third blade will then slip into the button-shaped mount on the adjacent blade. Then the three blades will be fixed, dilating the vagina and exposing the cervix.

The two blades which bear the handles are connected by a hinge all along their contiguous borders; the third blade is free along one border, while the other runs in a groove in the adjacent blade.

This instrument, though rather heavy and clumsy, was much used before the invention of Marion Sims' univalve speculum.

Figured in Cat. Obstet. Soc., 1866, fig. 191, p. 194, where it is described as "a modification and improvement of Madame Boivin's." The chief feature in this variety is the mechanism of the handles above described. *Royal Society of Medicine.*

(d) *Two superior-inferior blades, handles and plug.*

273. **Rizzoli's Speculum.**

Length 5 in. (12.7 cm.).

"Lollini," marked on solid handle, almost effaced.

A bivalve duck-bill speculum, with German silver blades, superior and inferior, rounded off and narrow, at their free ends above, but not in contact with each other when the hinges are closed. At their lower ends the blades are bordered by a circular rim of steel, which is continued downwards for 1 in. (2.5 cm.), and

slit in the middle. At each side of its lower end is a hinge for a handle $2\frac{1}{2}$ in. (6.3 cm.) long. A steel bar runs downwards from the lower blade and fits into the slit in the metal prolonged from the steel rim, and ends in a hinge between, and on a level with, the other two hinges. On this median hinge swings a second handle, $2\frac{1}{2}$ in. 6.3 cm.) long, and solid. A screw on each side fixes the lower blade to the steel rim; when the pair of screws is removed that blade can be detached, together with its jointed handle, from the upper blade which is soldered to the steel rim.

The blades are introduced closed with the wooden plug between them; they are parted by pressing the two handles between the finger and thumb, the solid handle playing between the slit in the outer handle. A steel check made to fit the blades has been lost. The joints allow both handles to be folded up, for convenience in packing, the outer handle holding in the wooden plug.

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(e) *Two superior-inferior blades, handles, no plug.*

274. **Cusco's Bivalve Speculum.**

(1st or Long-bladed Type.)

Blades 5 in. (12.7 cm.) long, almost even breadth, $1\frac{1}{4}$ in. (3.17 cm.) close to free end. "Ferguson, London."

This is the oldest type of Cusco's duck-billed speculum. The blades, superior and inferior, are very long; each has a handle attached to it, and the pair are opened by pressing the blades together. A screw running through the outside of the handle of the upper blade and fixed to the lower blade regulates the degree of separation. The handles are joined so as to fold, and the anterior, belonging to the upper blade, is fenestrated to lodge the holder's thumb. This speculum, with shorter blades, but with the same mechanism, is still (1921) in use.

Edouard Gabriel Cusco (1819—1894), surgeon to the Hôtel Dieu, Paris, was a man of great ingenuity; he invented an ophthalmoscope and other instruments besides this speculum. He was not a gynæcologist. *Royal Society of Medicine.*

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275. **Cusco's Bivalve Speculum.**

(2nd, or Short-bladed Type.)

Blades 4 in. (10.16 cm.) long; $1\frac{1}{2}$ in. (3.8 cm.) broad near the free end. Each blade has a handle, and the two are opened by drawing the handles together. A screw fixed to the handle of the lower, passes through the upper end and a travelling nut regulates the degree of separation. The handles are not jointed, in this sample, so as to fold.

This is an old-fashioned form of the short-bladed Cusco's

speculum. The handles were made long, so as to be convenient for manipulation, yet they proved unsatisfactory. Weiss' modification now (1921) in use, with the handles greatly shortened and the travelling nut furnished with widewings, was already popular in 1866 (see Cat. Obstet. Soc., p. 197, fig. 195).

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(f) *Two lateral blades, handles, no plug.*

276. **Trélat's Bivalve Speculum.**

"M. Wocher."

The blades lie laterally and are 5 in. (12.7 cm.), long and $1\frac{1}{2}$ in. (3.8 cm.) broad near the ends. They bear fenestræ of moderate size, but are heavy. The handles are jointed so as to fold upwards against the outer and everted ends of the blades when packed in a bag. They open the blades by means of a hinge-joint half an inch below their origin from the blades, and in the interval is a rack, secured by a screw in one handle when the fixation of the blades is desired. Below their folding joints the handles are fenestrated, slightly convex, and deeply grooved to prevent the hand from slipping.

The rod with a rack on its edge along which a screw travels is the distinguishing feature in the mechanism of Trélat's speculum.

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277. **Vaginal Speculum with Glass Blades.**

(*Trélat-Jackson Type.*)

Blades $4\frac{1}{2}$ in. (11.4 cm.) long, almost even in breadth throughout, $1\frac{1}{2}$ in. (3.8 cm.). "Mariaud à Paris."

The blades are of Cusco's type, fenestrated, but lie laterally. They bear glass shutters, removable, to prevent the walls of the vagina from falling through, and the shutters can be removed when it is necessary to dress the walls with caustic or lotions. The blades are worked by a complicated screw and rod arrangement. By turning the thumb-screw on the shorter rod, one blade can be expanded and, should it be desirable to dilate further, the thumb-screw at the end of the longer rod is turned from left to right, thus causing the other blade to travel along the bar which is over 2 in. (5 cm.) long. "Trélat's" speculum has a rack on the edge of the rod, along which the screw travels and expands the blades. In "Jackson's speculum," the blade only slides along the rod and can be fixed at any desired point by means of a screw. In this instrument the two mechanisms are combined.

Many specula (Reid's, Leonard's, Keen's, Gemrig's, the "Rotunda" type and others) have a bar movement to allow of a "second" and further dilatation.

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Donor unknown.

278. **Reeves-Schotterbeck's Bivalve Speculum.**

Length 4 in. (10.16 cm.). Breadth of each blade from $1\frac{3}{4}$ in. (4.4 cm.) at lower end to $1\frac{1}{4}$ in. (3.17 cm.) at free end.

"Gemrig, Phila." German make.

Nickel-plated steel speculum with two lateral blades. They are introduced closed and then, on pressing the long fenestrated handles, which run out almost horizontally from the blades, they are expanded and can be fixed as desired by turning the small screw which is placed outside the root of each handle and travels along a rack. Below the handles lies another pair united by a hinge-joint. These handles are fixed by a screw to the corresponding blades and bear a screw and travelling thumbpiece close to the free ends. By turning this thumbpiece from left to right the blades are further expanded. *Royal Society of Medicine.*

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279. **Ricord's Speculum.**

Blades 5 in. (12.7 cm.) long, $\frac{5}{8}$ in. (1.5 cm.) wide at free end, $1\frac{1}{4}$ in. (3.17 cm.) wide at outer end. "Coxeter."

German silver blades, placed laterally; they have an outward bend from the lower end to the free extremities and are introduced into the vagina closed at the free end, the handles, which bend downwards and are coated outside with chequered wood, being opened. By closing the handles the blades are opened, swinging on a hinge attached about the middle of their lower borders. They are kept open by a nut running along a rack attached to one handle and passing through the other.

Figured Cat. Obstet. Soc., 1866, Fig. 193, p. 196.

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(g) *Two superior-inferior blades: no true handles: plug.*

280. **Bennet's Speculum.**

(*Plug bearing sponge and caustic holders.*)

Blades $5\frac{3}{4}$ in. (14.6 cm.) long; $1\frac{1}{8}$ in. (2.6 cm.) broad at free end.

Marked "Coxeter's Speculum."

A German silver bivalve speculum, blades $1\frac{1}{8}$ in. (2.8 cm.) in diameter at the free end, $1\frac{3}{4}$ in. (4.4 cm.) at outer end, lying superior and inferior, they "are opened by the ordinary screw lever," which also serves as a handle, as in Weiss' modification of Cusco's speculum. The black wooden plug is hollow and made so that a sponge and caustic holder may be packed inside it (see No. 322, Bennet's Combined Scarifier, Caustic and Sponge Holder). This modification, not existent in the "Dr. Henry Bennet's Speculum," figured in the Cat. Obstet. Soc., 1866, fig. 198, p. 199, was apparently introduced by Coxeter. *Royal Society of Medicine.*

(C) *Skeleton or Bath Speculum.*

281. **Palfrey's (Blackbee's) Skeleton Speculum.**

"Blackbee: Patent."

Figured and described in the *Lancet,* vol. ii, 1871, p. 820. "An entirely new form of speculum, of a most simple and novel construction, which may be said to possess great advantages without mechanical complexity. Its chief features are as follows:—1. From its blade—outline or skeleton shape—being composed of hard German silver wire (0.3 cm. diameter), strongly plated with pure silver, it offers the most extensive view possible of the entire circumference of the vagina and cervix uteri, permitting the easy application of necessary remedies to their whole surfaces. 2. Its resiliency is a great feature in its favour, rendering it easy of introduction and safe in withdrawal, readily adapted, self-adjusting and self-retentive, thus allowing the free use of both hands of the operator. 3. Being free at both extremities, this speculum, by slight manipulation, may be contracted or expanded to suit special cases and requirements. 4. As to durability (having no screws or levers) it may be deemed practically indestructible, as nothing but actual violence could possibly injure it. 5. It is extremely light for a metal instrument, and the cheapest speculum yet offered to the medical profession." An india-rubber ring was slipped over to keep its diameter as small as possible during introduction, but "useful at first, it may, after a little acquaintance, be entirely dispensed with."

The wire is folded into eight parts, or four loops, one pair 5 in. (12.7 cm.) long for the anterior and posterior vaginal walls and another pair of loops 6 in. (15.2 cm.) long for the lateral walls, these lateral loops being everted at their lower end to keep back the external soft parts.

Blackbee was a music-master who suggested the speculum to Dr. Palfrey, Obstetric Physician to the London Hospital, under whose supervision it was brought out. Experience proved that it was not a handy instrument for vaginal exploration, but though not originally designed for keeping the vagina open under water, it serves most satisfactorily as a "Bath Speculum," and is now usually sold under that name. *Royal Society of Medicine.*

(D) *Cylindrical Specula.*

282. **Horn's Pewter Speculum.**

Length 6 in. (15.2 cm.); diameter at upper end $1\frac{1}{4}$ in. (3.17 cm.) vertical, 1 in. (2.5 cm.) horizontal; at lower end (circular) $1\frac{1}{2}$ in. (3.8 cm.).

An old-fashioned, thick, heavy tubular speculum. It is furnished with a simple handle (part of the metal) two inches long (5 cm.)

running downwards and slightly backwards. Described as "Horn's Pewter Speculum" on the label which it bore in the Museum of the Obstetrical Society of London. The name of the donor was not preserved. It was figured in a French catalogue (Leplanquais') in 1864 with no name. Kilian figures a somewhat similar speculum in his "Geburtshülflicher Atlas" (1835) as Dupuytren's. The tubular speculum is as old, if not older, than the three-bladed "speculum matricis (266)." According to the Talmud a woman could examine herself by introducing a trumpet-shaped tube (probably a bamboo internode) into the vagina and passing up the tube a rod with a cotton tampon to detect bloody discharge.

See also No. 337. *Royal Society of Medicine.*

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283. **Tubular Pewter Speculum.**

(Old. Cat., H. 1.)

Length $5\frac{1}{2}$ in. (14 cm.); lower end $1\frac{1}{4}$ in. (3.17 cm.) diameter; upper end $1\frac{1}{8}$ in. (2.8 cm.).

A cylinder of thin pewter with no handle. The upper end is circular, the free edges are turned slightly inwards. It is furnished with a big wooden plug.

This is the old pewter tubular speculum in vogue before the widely-used instrument bearing the name of Ferguson was introduced. It was employed mainly for dressing purposes.

Donor unknown.

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284. **Fergusson's Speculum.**

(Metal. Old Cat., R.C.S., H. 2.)

German silver 5 in. (12.7 cm.) long; 1 in. (2.5 cm.) in diameter.

An early form of this instrument, made of metal, not of glass. The upper end is oblique, as usual, the metal along the edge of the opening is not bevelled, but turned slightly inwards. Several other materials have been employed for Fergusson's speculum, such as celluloid, earthenware (Dunnett Spanton), etc.

N.B.—The true Fergusson's speculum in its "latest model" is (1) made of glass; (2) silvered; (3) covered with several coats of elastic gum. Alfred Walsh added a linen web, woven over the first coating of gum, so that the instrument should not come to pieces when broken during use. Robert Ferguson (1799—1865), the first Professor of Obstetric Medicine to King's College, employed a tubular glass speculum, as did W. E. Laing Fergusson (died 1887), and it was sold by Ferguson, of Smithfield, as Ferguson's speculum. Sir William Fergusson, Bt., 1808—1877, in speaking of his well-known rectal speculum, states that "it may be made in all respects similar to the speculum for the vagina which I devised

many years ago, and which is now (1870) in very general use when such a mode of examination is needed." (*System of Practical Surgery*, 5th ed., 1870, p. 655.) It appears that Matthews, the instrument maker, first fashioned this speculum after the "latest model" (see above) about 1855, because Sir W. Fergusson had complained that he was dissatisfied with the tubular speculum, R. Ferguson's, then in use in King's College Hospital. See "Fergus(s)on's Speculum," *Brit. Med. Journ.*, vol. i, p. 397, vol. ii, 1916, pp. 208, 608.

It is important to remember that in the Cat. Obstet. Soc., 1866, p. 290, a "Ferguson's glass speculum" is described. Sir William Fergusson had received his baronetcy three months before the Conversazione was held, and the Catalogue was issued, after careful editing, in December 1866. *Mrs. Hatton*, 1871.

NOTE.—**Specula in the Lister Collection.**

The Lister Collection includes a D. Davis's tapering speculum a Galabin's speculum * * 151, and two Fergusson's specula. There is also a speculum used as a vaginal dilator, ascribed to Simpson * * 153. This is a four-bladed instrument. Two outer blades, on hinges, are connected with two inner blades folded up within the outer when the latter are closed. On pressing the handles, which are of the Ségalas type, the inner blades open out, dilating the vagina.

The tapering vaginal speculum (. . . 40) is a later development of an instrument of another type used by David Davis for the introduction of medicated sponge pessaries. See David Davis, "Principles and Practice of Obstetric Medicine," p. 550, and Pl. Xc, fig. 3.

Auvard designed a short tubular speculum, like Galabin's: see Arnold's List, 1900, fig. 2,582, p. 778. It was made for use with volsella forceps.

(E) *Duck-bill Specula.*

285. **Marion Sims' Speculum.**

This sample measures 7 in. (17.7 cm.) across from bend to bend, the blades being 3 in. (7.6 cm.) and 4 in. (10.16 cm.) long respectively; the breadth of the lesser, near the free end is 1 in. (2.5 cm.); the breadth of the longer near the freeend $1\frac{3}{8}$ in. (3.5 cm.).

The circumstances which led Marion Sims to devise his now well-known speculum are fully related in his "Clinical Notes on Uterine Surgery," 1866, pp. 11 to 17. He discovered, by chance, in 1845, how the genu-pectoral position allowed a thorough view of the vaginal walls, the pelvic viscera slipping out of the way. He

therefore placed a patient subject to vesico-vaginal fistula in that position, and used the handle of a spoon curved at right angles to open the vagina, elevate the perineum, and allow the air to enter. Then he made a single-bladed instrument, narrower and more concave than a spoon (*loc. cit.*, fig. 2) as in this sample, but later on, he added a second blade, as when one blade is introduced into the vagina the opposite makes an excellent handle. "I discovered that it could be used quite as efficiently with the patient on the left side as on the knees. For nearly twenty years (Sims was writing in 1866) I have used no other speculum. . . . It is the best speculum for any purpose, whether it be for the application of the simplest dressing, or for the execution of the most difficult operation." The history of the invention of this speculum is also related in Sims' "Story of My Life," p. 234. *Royal Society of Medicine.*

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286. **Marion Sims' Speculum.**
(*Virgin Type.*)

This sample measures 6 in. (15.2 cm.) across from bend to bend, the blades being in length $2\frac{7}{8}$ in. (7.3 cm.) and 3 in. (7.6 cm.) respectively; they are very narrow, the lesser being $\frac{5}{8}$ in. (1.5 cm.) and the larger $\frac{7}{8}$ in. (2.2 cm.) broad near the free end.

"The smallest I call the virgin speculum, for unhappily we are sometimes compelled to use a speculum on the unmarried, and then it is proper to have it of a suitable size as not to give pain and not to injure the hymen. Here one blade is a little less than three inches long, the other a fraction over; the first three-quarters of an inch wide, the other seven-eighths." (J. Marion Sims, "Clinical Notes on Uterine Surgery," 1866, p. 19).

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286A. **Electric Lamp for Illuminating Vagina.**

Length $11\frac{1}{2}$ in. (29.2 cm.); outer glass cylinder 8 in. (20.32 cm.) long, diameter $\frac{3}{4}$ in. (2 cm.); cylinder covering lamp 1 in. (2.5 cm.) long, $\frac{1}{2}$ in. (1.27 cm.) diameter, mounted on a vulcanite rod; stout flat chequered ivory handle; ivory ring $2\frac{1}{8}$ in. (5.4 cm.) diameter.

This apparatus includes an india-rubber tube to form a siphon irrigator, allowing the passage of water between the outer glass cylinder and the inner covering the lamp; thus the glass can be kept cool. Possibly it was also intended to increase the illuminating power. The ivory ring, roughened externally, with deep grooves at two opposite points, keeps the vaginal walls distended.

A watchmaker's eye lens, with an ivory border, fits into a special compartment in the case; its object is not clear, but it probably represents some special arrangement to suit the donor.

The general make of the apparatus, the platinum ribbon, instead of wire filaments, the pure rubber tubing and the chequered ivory handle indicate that it was made about the year 1860.

No record of its name or of its presentation to the Museum of the Obstetrical Society is preserved. It would seem, as indicated above, that the lamp was designed and specially made to suit the donor whose name has been lost. *Royal Society of Medicine.*

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287. **Uterine Sound. Early Type.**

Length when straightened 15½ in. (39.3 cm.); stem 11½ in. (29.2 cm.).

An instrument of very primitive make, with a plain flattened wooden handle like in a carpenter's chisel. The stem is made of flexible metal, probe-pointed at the extremity and much flattened and widened towards the handle. It has been bent to about the usual length and angle, 2½ in. (6.3 cm.) below the extremity, but there is no projection at the engle as in Simpson's instrument.

This sound was used by a practitioner many years before it was presented to the Museum of the Royal College of Surgeons by the donor. *Penrose Williams, Esq.*, 1912.

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288. **Simpson's Uterine Sound.**

Length 1 ft. (30.5 cm.); stem 9½ in. (24.1 cm) long; notched on the back and marked 1½ in. (3.8 cm.), and 3½ in. (8.87 cm.) to 8½ in. (21.5 cm.) at the corresponding notches; 2½ in. (6.3 cm.), which is not marked, corresponding to the projection at the angle. The free extremity is bulbous, the stem straight up to a point 2½ in. from the extremity, where it is curved upwards; the curve can be increased or diminished as the stem is made of flexible steel. There is a convex projection at the angle, marking the average limit of the uterine cavity, made by a separate piece of metal soldered to the stem. The handle is flat, in a straight line with the stem, its surface is chequered in front and lined with ebony behind.

This is the sound used by Sir James Y. Simpson, who introduced the *hysteromètre* into this country. He taught that by its introduction to the uterine cavity the explorer could ascertain the exact position and direction of the body and fundus of that organ; could bring these higher parts of the uterus, in most instances, within the reach of tactile examination; and could ascertain various important circumstances regarding the os, cavity, lining membrane, and walls of that viscus. The "sound" or "probe" was once freely used when unnecessary or even dangerous, but it remains a useful instrument.

This sound was exhibited in 1866 and presented to the Obstetrical Society by Messrs. Maw and Son. Simpson's original account of this well-known instrument appeared in his "Contributions to the Pathology and Treatment of Diseases of the Uterus," *Lond. and Edin. Monthly Journ. of Med. Science,* August 1843, p. 701, and was re-published by Watt Black in his "Selected Obstetrical and Gynæcological Works of Sir J. Y. Simpson," 1871, vol. i, p. 616.

"The instrument which I employ is somewhat similar to a small male catheter. It is, moreover, provided, like the common male sound, with a flat handle, to facilitate its manipulation; and terminates at its outer extremity in a rounded knob or bulb, to prevent injuries to the uterine textures. . . . At two inches and a half from the extremity of the instrument, this measurement being the usual length of the uterine cavity, there is placed a slight elevation or knob, which, in the employment of the bougie, at once serves to show that it is introduced to the full extent into the interior of the organ, and at the same time forms a fixed or standard point from which the instrument may be further graduated towards either of its two extremities." *Royal Society of Medicine.*

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289. **Protheroe-Smith's Folding Uterine Sound.**

13 in. (33 cm.) long; notches marked from $2\frac{1}{2}$ in. (6.35 cm.) to $9\frac{1}{2}$ in. (24.1 cm.).

A long metal sound with the usual probe-pointed extremity and projection at the angle. There is a hinge-joint in the middle of the shaft, so that the upper part can be folded on the handle, which has no groove or slot to receive it as in several similar instruments. The probe end when folded projects beyond the handle. A cylindrical sheath of metal fixes the joint when the instrument is in use. The handle, which is coated at the back with ebony, is in a straight line with the stem. This instrument is a sample of the original form of Protheroe-Smith's folding sound. Finding it clumsy, he contrived a modification, where the handle was bent back to fit the uterine end and made much smaller lest it should be held too firmly when passed. Heywood Smith further modified the sound by making the bent handle fenestrated, so as to lodge the probe end when the instrument was folded and also to act as a depressor. In Marion Sims' folding sound the handle was straight, but bore a slit to lodge the probe end. In this instrument the sliding sheath runs on the distal side of the joint; in most others it ran on the side nearest the handle. (MSS. Dr. Heywood Smith, 1913.) *Royal Society of Medicine.*

290. **Lazarewitch's Uterine Sound.**
(*Rizzoli's Modification.*)

$9\frac{1}{2}$ in. (24.1 cm.) long. The back marked with a scale of centimetres, beginning with 3 cm. (1.17 in.) which lies at that distance from the free end, and ending with 20 cm. ($7^4/_5$ in.) near the handle. The front bears notches corresponding to 3, 4, 5, 9, 10 and 11 cm., and blunt elevations corresponding to 6, 7 and 8 cm., whilst below the joint the front of the sound is smooth.

This uterine sound is made of brass. It bears a narrow nickel-plated and highly polished (see below) steel handle, leaf-shaped, curved downwards and smooth on both sides, like a spatula. The stem is jointed at 12 cm. ($4\frac{3}{4}$ in.), and, for convenience in packing, its upper part bends backwards but not further than to a right angle with the lower part. A cylindrical sheath of metal, marked 12 (*i.e.*, 12 cm.), fixes the joint when the instrument is in use; it does not slide but is screwed on and off the joint. The extremity of this sound is probe-pointed as in British instruments, but there is no projection on the back of the stem at the point where it turns up, and this point is only 4 cm. (1.56 cm.) from the extremity, and the curve is much wider than in the sounds in use in this country.

Described as "the *Uterine Sound* of Professor *Lazarewitch*" in Cat. Obstet. Soc., 1866, p. 211; but the sample exhibited in 1866 was not jointed. "The two ends were bent in opposite directions in the form of the letter S; one end was shaped like the ordinary sound, the other was flattened like a small oval spatula." Excepting that it is not stated that 3, 4, and 5 are marked, the ntoches and elevations correspond to those in this sample, "these differences being intended to facilitate the measurement of the uterus without the withdrawal of the sound. The spatula-shaped end readily indicated any change in the direction of the instrument, and, more than that, according to the author, if the handle is introduced into the cervical canal, and by its means the anterior is separated from the posterior wall, then it is possible to see either of them on the polished surface of the concave side of the handle. Thus the instrument becomes also an intra-uterine speculum."

Thus the unjointed sound exhibited in 1866 was identical, except in one respect, with this sample which was labelled "Rizzoli's uterine sound" in the Obstetrical Society's collection. Rizzoli added the joint, suggested probably by Protheroe Smith.

Royal Society of Medicine.

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291. **Lazarewitch's Straight Uterine Sound.**

Length $8\frac{1}{2}$ in. (21.5 cm.).

A flexible instrument made of some preparation of rubber perfectly straight, with the handle flattened out as in most sounds

or catheters. In length it corresponds to the same authority's vulcanite uterine dilators, No. 236. It bears 6 notches (See No. 290). The first lies 3 cm. (1.17 in.) from the free end, the second 4 cm .(1.5 in.), and the third 5 cm. (2 in.); three blunt elevations on the surface of the sound mark the next 3 centimetres, whilst 3 centimetres more are indicated by the remaining three notches. The free end is only slightly flattened, and its calibre is about that of a Simpson's sound.

Labelled "Straight caoutchouc Uterine Sound of Prof. Lazarewitch, Kharkoff, Russia," in Museum, Obstetrical Society of London. *Royal Society of Medicine.*

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292. **Lazarewitch's Curved Uterine Sound.**

Length $8\frac{1}{2}$ in. (21.5 cm.).

An instrument precisely resembling the straight uterine sound, No. 291, with corresponding elevations and notches, except that it is of rather less calibre and turns up slightly 3 cm. (1.17 in.) below its free extremity. There is no projection on the back of the instrument, as in Simpson's sound, to indicate the bend.

Labelled "Curved Caoutchouc Uterine Sound of Prof. Lazarewitch, Kharkoff, Russia," in Museum, Obstetrical Society of London. *Royal Society of Medicine.*

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293. **Sponge Holding Forceps.**

$9\frac{1}{2}$ in. (24.1 cm.) long; blades $3\frac{1}{4}$ in. (8.2 cm.); fenestra $1\frac{5}{8}$ in. (4.12 cm.) long, $\frac{3}{8}$ in. (0.9 cm.) at widest point.

"Mayer, London."

One blade terminates in an oval ring or fenestra and the other bears an oval cushion or convexity to fit into the fenestra, thus enabling the sponge or gauze to be held firmly. Scissor screw lock, no block, shanks superimposed. The shanks are bowed to give pressure at the point, and there is a rack half-an-inch above the rings.

For pelvic and abdominal operations.

Very similar to Weiss' "Fenestrated Tumour Forceps" for ovariotomy, Pl. xxxii, Fig. 3, in Weiss' Cat. 1863. It proved more convenient for sponge holding than for grasping tumours.

Royal Society of Medicine.

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294. **Uterine Dressing or Speculum Forceps (I)**

Length $9\frac{1}{2}$ in. (24.1 cm.); tip to lock 4 in. (10.16 cm.).

The shanks and blades are perfectly straight. The blades are parallel, but the shanks are not so, for when the blades are closed they are $\frac{1}{4}$ in. (0.6 cm.) apart at the point where the rings begin.

Double block pivot joint; the pivot is really a rivet braised outside one blade, which is consequently fixed, and burred on the outer surface of the other blade. The double block and the pivot make the blades (though very long) work well without lateral deviation, so that a sponge or any other body can be held firmly.

Royal Society of Medicine.

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295. **Uterine Dressing or Speculum Forceps (II).**

Length 12½ in. (31.75 cm.); tip to lock 6 in. (15.24 cm.).

"Savigny & Co."

A very long instrument. The shanks of the blades are quite straight. The blades do not expand but are blunt at their extremities, and for 1¼ in. (3.17 cm.) their inner surfaces bear U-shaped grooves; double block pivot joint, as in No. 294. Handles slightly bowed at shanks to allow of pressure at the points.

The speculum forceps with bent handles in the collection is much more convenient. *Royal Society of Medicine.*

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296. **Uterine Dressing or Speculum Forceps (III).**

Length 9½ in. (24.1 cm.); tip of blades to lock 3¾ in. (9.5 cm.).

Blades super-imposed, crossing immediately below nozzles which are each ¾ in. (2 cm.) long, and of the usual dressing forceps type, grooved on the under surface where there is a shallow concavity. Scissor or screw-joint, with shank block; screw burred at its free end, so that it cannot be removed. Shanks parallel when closed, perfectly straight, almost quadrilateral but rounded along their outer surface. *Royal Society of Medicine.*

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297. **Speculum Forceps with Bent Handles.**

Length 11½ in. (29.2 cm.); tip to lock 4 in. (10.16 cm.); tip to bend 8 in. (20.3 cm.).

A very long instrument. It measures nearly a foot, but the shanks of the handles are bent to an angle of 45° at a point a little nearer to the bows than to the joint. Riveted block screw-joint. The blades are made to lie superior and inferior to each other, and when closed their inner surfaces are co-apted by transverse grooves for ⅜ in. (0.9 cm.) at the free end, which is slightly expanded, whilst there is a space between them increasing towards the lock.

A favourite type, very useful when the main object is the inspection of the cervix and os. The handles being bent downwards, the operator's hand is out of the light. The name of Whitehead is associated with this instrument; this sample is an early type, as the lock is now usually made further back from the tip. *Royal Society of Medicine.*

298. **Weiss' Cross Action Speculum Forceps.**

Length $9\frac{3}{4}$ in. (24.76 cm.); tip to lock $4\frac{1}{4}$ in. (10.7 cm.)

"Weiss."

The extremity of this instrument resembles that of an ordinary surgeon's dressing forceps, a long oval nozzle, about 1 in. (2.5 cm.) in length, grooved transversely on its inner surface, except in the middle which is smooth and concave, so that gauze or wool may be firmly held. Simple screw-lock, with no block, but there is a block on the shanks 3 in. (7.6 cm.) beyond it, towards the ring handles.

By the cross-action (*branches croisées et contre-croisées*), both in the shanks of the handles and the shanks of the blades, the latter are brought together when the blades are moderately parted; whilst the shanks of the handles are brought together when the blades are widely parted. Thus the shanks are as little in the way as possible. The cross-action also adds power to the blades, for long and straight shanks are springy, and therefore cannot hold wool, etc., firmly.

Compare this instrument with Sir Benjamin Brodie's stone-crushing forceps, Series G, No. 202. *Royal Society of Medicine.*

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299. **Charrière's Uterine Dressing Forceps (I).**

Blades $3\frac{3}{4}$ in. (9.5 cm.) long; handles 6 in. (15.24 cm.) long.

"Charrière."

The handles cross, so that when the blades open, in use, the shanks of the handles are super-imposed, and hence do not take up much room in the speculum. See also note to 298. The nozzle is short, of an elongated oval shape, with very fine teeth. A fixed rack is attached to one handle, with a spring clip on the other, which can be put in or out of action by a movement of the finger. Simple screw-lock.

A light, well-made instrument, highly convenient for applying or removing dressisgs, tents, etc. *Royal Society of Medicine.*

299A. **Charrière's Uterine Dressing Forceps (II).**

Blades 3 in. (7.6 cm.); handles $4\frac{1}{2}$ in. (11.4 cm.).

"Charrière."

A stouter pair, the handles do not cross, but their shanks are much more bowed outwards in the middle than in No. 299. The nozzle is stout and fairly long, with deep transverse grooves, and is perforated in the middle. *Royal Society of Medicine.*

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300. **Pfeiffer-Mathieu's Treble Jointed Uterine Forceps.**

The measurements correspond almost precisely to those of Pfeiffer-Mathieu's treble-jointed uterine scissors, No. 310. The

handles are bent upwards an inch above the bows. The nozzle at the free end is $\frac{3}{4}$ in. (2 cm.) long, slightly broadened and blunt at the point. The blades at the nozzle are serrated on their inner surfaces.

"A pair (*sic*) of *Uterine Speculum Forceps,* with treble-joint were (*sic*) exhibited as invented by *Matthieu,* and are (*sic*) represented below (Fig. 98)." Cat. Obstet. Soc., 1866, p. 111. The figure represents another sample with straight handles, marked "Matthieu." See description of the treble-jointed uterine scissors which the Catalogue above quoted ascribes (pp. 191-2) to Pfeiffer.

Royal Society of Medicine.

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301. **Uterine Volsella Forceps.**

Length $12\frac{1}{2}$ in. (31.75 cm.); blades 6 in. (15.24 cm.) long.

"Savigny & Co."

Two teeth on either side, one pair fitting into the other, so that when the blades are introduced closed, their point is guarded. Handles slightly bowed in the shanks to allow of pressure at the points. Double block pivot joint.

The object of the special construction of this very elongated volsella forceps is explained above. The operator can feel sure that the points are not wounding the patient when the instrument is being introduced.

This instrument is of relatively old construction and was exhibited at the Obstetrical Society's Conversazione in 1866. But its name has, even to the present day, been associated with more than one authority and institution. *Royal Society of Medicine.*

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302. **Charrière's Uterine Volsella.**

Length $10\frac{1}{2}$ in. (26.6 cm.); tip to lock 4 in. (10.16 cm.).

"Charrière."

The teeth in this volsella, three in number, $\frac{1}{4}$ in. (0.6 cm.), are bent almost directly downwards; their points, much incurved, cross those of their fellows on a plane below that of the long axis of the blades, an unusual arrangement. The lock is of the Brünninghausen type, a fixed pivot fitting into a notch on the border of the opposite limb. As in Charrière's uterine dressing forceps (No. 299) a fixed rack is attached to one handle with a spring clip on the other, which can be put in or out of action by a movement of the finger, and the handles cross, so that when the blades are opened the shanks of the handles are parallel and take up as little space as possible in the speculum. A powerful instrument made to seize fibroid polypi. Compare Charrière's uterine volsella forceps (No. 303), a smaller instrument with two teeth and straight shanks.

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303. **Charriere's Uterine Volsella Forceps.**

Length $7\frac{1}{2}$ in. (19 cm.); tip to lock 3 in. (7.6 cm.).

"Charrière."

The teeth in this volsella forceps, two in number and over $\frac{1}{8}$ in. (3 cm.) long, are bent almost directly downwards, their points, much incurved, cross those of their fellows on a plane below that of the long axis of the blades. Box joint. or male and female pivot block joint. The shanks of the handles and blades are perfectly straight. Compare Charrière's Uterine Volsella, No. 302, suited for seizing fibroid polypi. This forceps is adapted for drawing down the cervix. In both the teeth turn downwards, an unusual arrangement. *Royal Society of Medicine.*

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304. **Charrière's Uterine Volsella Forceps.**

(Curved Blades.)

Length, not by the curve, $9\frac{1}{2}$ in. (24.1 cm.), by the curve 10 in. (25.4 cm.); blades to lock, straight, $4\frac{1}{2}$ in. (11.4 cm.).

"Charrière."

The blades make a wide curve and each end in a pair of teeth $\frac{3}{4}$ in. long, not bent downwards, as in Nos. 302 and 303, but simply incurved, those of the lower lying between those on the upper blades when the handles are closed. Double block pivot-joint. The handles are perfectly straight and free without any spring, catch or peg.

A volsella forceps of this type is convenient either for drawing down the cervix or for seizing small fibroid polypi.

Royal Society of Medicine.

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305. **Matthew Duncan's Uterine Volsella Forceps.**

(Separable Blades.)

Length 10 in. (12.4 cm.), of blades to lock 6 in. (15.24 cm.).

Steel, nickel-plated. The lock is of the English or Chapman-Smellie type, as in British obstetric forceps, not only to allow the blades to be separated for thorough cleaning, but also to make a single blade available when more convenient to use than the pair, or to allow one to be fixed on to a large fibroid polypus bferoe the other when its delivery is difficult. The shanks are long, flattened antero-posteriorly, bowed considerably outwards immediately above the lock, and very stout. Each blade ends in a pair of incurved teeth, over $\frac{1}{2}$ in. (1.2 cm.) long, those on the right blade fit between those on the left when the blades are shut. The handles are slightly bowed in the shanks to allow of pressure at the points.

Museaux's forceps, already in use in 1866, closely resembled

Duncan's, the blades being separable. They were not so sharply bowed outwards immediately above the lock (Cat. Obstet. Soc., 1866, p. 109, fig. 94). *Royal Society of Medicine.*

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306. **Sims' Uterine Tenaculum.**

Length 1 ft. (30.5 cm.), the metal stem being 8 in. (20.3 cm.).

A steel bar, cylindrical, lessening in dimeter towards the free end where it terminates in two sharp teeth $\frac{1}{4}$ in. (0.6 cm.) long, bent downwards, almost at a right angle, being but slightly incurved. Ivory octagonal handle.

Used by Marion Sims in his operation for the division of the cervix uteri (see No. 307). *Royal Society of Medicine.*

306A. **Durham's Vesico-Vaginal Forceps.**

Total length 8 in. (20.3 cm.).

"Mayer & Meltzer, London."

A steel spring-forceps. At their upper end a piece of flat steel is placed between the shanks, through which they are held together by two rivets.

Near the extremity of the upper shank is a scissor-joint, which is worked by the lower shank, to the end of which is jointed a short, curved blade, which passes through the metal of the upper blade at the scissor-joint, and ends in four forks. The upper shank is turned up beyond the scissor-lock, forming the upper blade, and ends in three forks, incurved as on the opposite blade. The lower shank bears a pivot with a mill-headed screw, to regulate the distance between the forks, and a button-slide fixes the instrument with the blades closed to the desired extent. A pin is placed between the shanks near their junction to counteract the effect of over-pressure on the blades. (See "Dressing and General Instruments," No. 43.)

Frederic Durham, Esq., and Dr. H. A. Durham, 1918.

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307. **Sims' Tent Introducing Forceps.**

10 in. (25.4 cm.) long, nickel-plated.

"J. Mayer & Co., Portland Street, London."

A long, narrow, perfectly straight forceps of the Liston's artery-forceps type with extremity slightly widened, each limb bearing on its inner side a minute tooth to hold the tent. There is a catch and a sliding button (instead of the spring catch more usually seen in this forceps) to keep the points together or to set them free as desired.

The peg in the middle of the inner surface of one blade, which passes through a hole in its fellow, ensures the accurate closing of

the blades without any lateral deviation. The peg near the lower extremity touches the opposite shank when the points are closed and prevents the points being forced apart by over-pressure of the fingers on the blades. The patient was laid on her left side, and then the posterior wall of the vagina was elevated by a Sims' speculum (No. 285). The uterus was steadied by aid of a tenaculum hooked into the anterior lip of the cervix and the tent held by the forceps introduced into the cervical canal up to the os internum. See Marion Sims, "Clinical Notes on Uterine Surgery," 1866, Fig. 14, p. 49. *Royal Society of Medicine.*

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308. **Bantock's Tent-Introducer.**

Length 9 in. (22.8 cm.); point to guard $2\frac{1}{4}$ in. (5.7 cm.).

A metal stem mounted on a flattened and roughened wooden handle; its point is sharp, and it bears a hemispherical guard within the flat surface uppermost, placed at the point corresponding to the angle of a uterine sound. *Royal Society of Medicine.*

308A. **Barnes' Laminaria and Sponge-Tent Carrier.**

Length of entire instrument from end of handle to end of stilet, ready for fixing the tent, $13\frac{1}{2}$ in. (34.3 cm.); of handle $4\frac{1}{4}$ in. (10.7 cm.); of elastic catheter portion $7\frac{1}{4}$ in. (18.4 cm.).

Dr. Barnes thus describes how this instrument was evolved in his "Clinical History of the Medical and Surgical Diseases of Women" (1873 edition, p. 134):—"*The Laminaria and Sponge Tent Carrier.* This is a very useful instrument contrived by me some years ago, to carry laminaria tents into the uterus. It consists of a piece of elastic catheter having the end cut off, so that the stylet may project about two inches. Upon this portion of stylet the tent, which is hollow, is mounted. It thus makes one with the catheter and can be passed into the uterus nearly as easily as the uterine sound. When the tent is *in situ,* which is ascertained by the guiding finger at the os uteri, the stilet is withdrawn; the unsupported tent is then left in the uterine canal. This description shows that an efficient instrument can be improvised out of a catheter. But it is convenient to have a special instrument. . . . . At the handle end of the catheter or tube is a disk or shield which gives a point of resistance for the thumb when the handle and stem are withdrawn."

This sample is an intermediate between that "improvised out of a catheter" and the instrument described and figured (Fig. 41, *loc. cit.*) by the inventor. It has a four-sided, solid, chequered ebony handle, bearing the metal stilet of which the free end, two inches (5.08 cm.) long, for fixing the tent, is much thinner than the

remainder, but not separable from it. The later development, described by the inventor, "is provided by two sizes of stylets, which screw into the stem; also with a pointed stylet to carry sponge tents. These stylets are stowed into the handle, which is hollow" (*loc. cit.*, omitted in above quotation).

Royal Society of Medicine.

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309. **Uterine Speculum-Scissors Curved on the Flat.**

Length 10½ in. (26 cm.), not reckoning curve; 2¾ in. (7 cm.) tip to lock. "Weiss, 62, Strand."

Stout blunt-ended blades curved on the flat. Cross-action, so that when the points are opened the shanks are brought together, super-imposed, instead of parting and coming inconveniently into contact with the sides of the speculum. Simple or screw-lock without blocks, as in scissors; now (1921) a Charrière-Péan's or a "take-apart" joint is used. There is a block on each shank at the point of crossing, 1½ in. (3.8 cm.) above the rings or bows.

Royal Society of Medicine.

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310. **Pfeiffer-Mathieu's Treble-Jointed Uterine Scissors.**

Total length 11 in. (28 cm.); of handles from bows to screw block lock 6½ in. (15.8 cm.); from lock to screw-joints for the handles of the terminal scissors 2 in. (5 cm.); length of terminal scissors 2⅝ in. (6.6 cm.), the blades from their scissors-lock to their free end being 1⅜ in. (3.5 cm.), not measured along the curve; the handles are bent downwards an inch above the rings or bows. "Coxeter."

In the Cat. Obstet. Soc., 1866, p. 191 and fig. 188, this instrument (another sample, with *straight* handles, marked "Ferguson"), is described as "a very useful pair of scissors which were (*sic*) exhibited by *M. Mathieu,* of Paris, and it will be seen that the same principle of action as is there made use of can be applied also to the manufacture of forceps: such mechanism seems to increase the delicacy of the instrument, though, perhaps, at some cost to its strength. The idea was suggested to M. Mathieu by Dr. Pfeiffer." (See also description of Mathieu's Treble-jointed Uterine Forceps, No. 300.)

Marion Sims adopted this instrument, which sometimes bears his name; see No. 311. Dr. Heywood Smith modified it, see Nos. 311A and 311B.

Royal Society of Medicine.

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311. **Treble-Jointed Uterine Scissors (Sims' Modification).**

Total length 12 in. (30.5 cm.); length of handles from bows to screw block-lock 6 in. (15.24 cm.), from lock to screw-joints for the handles of the terminal scissors 3 in. (7.5 cm.); length of terminal

scissors $3\frac{1}{4}$ in. (8.2 cm.), the blades from their scissors-lock to their free end being, if not measured along the curve, $1\frac{1}{2}$ in. (3.8 cm.); the handles, from bows to screw block-lock, are absolutely straight, just as in the sample of Pfeiffer-Mathieu's scissors represented in Cat. Obstet. Soc., 1866, fig. 188, p. 192; see note to No. 310.

"Coxeter."

As explained by the above measurements, this instrument closely resembles the Pfeiffer-Mathieu treble-jointed scissors in this collection (No. 310), but its handles are straight (as is fig. 188, p. 192, in the Catalogue, 1866) and the proportions different. The terminal scissors are longer, but not made to work at an angle as in Heywood Smith's modification, Nos. 311A and 311B.

Penrose Williams, Esq., 1912.

311A. **Heywood Smith's Angular Uterine Scissors (Straight).**

Total length $10\frac{3}{4}$ in. (27.3 cm.); length of handles from bows to screw-lock 6 in. (15.2 cm.), from screw to rotatory joint 2 in. (5 cm.), from rotatory joint to point of scissors $2\frac{3}{4}$ in. (7 cm.).

No maker's name—same workmanship as No. 311B, marked "Mayer and Meltzer."

Fully described, with drawings of this instrument and the next, No. 311B, in the *Lancet*, vol. i, 1872, p. 583, where it is explained that the special mechanism was devised by the makers, Messrs. Mayer and Meltzer, and in the *Trans. Obstet. Soc.*, vol. xiv (1872), p. 68, where it is stated that "Dr. Heywood Smith exhibited a new instrument which he called angular scissors. When they are straight they constitute a pair of scissors similar to those of Marion Sims. They have, however, this advantage, that the small scissors can be bent at any angle with the handles up to nearly a right angle. To accomplish this it has been necessary to make on each leg of the scissors a complicated joint consisting of three separate movements within the space of half-an-inch. The first of these is the ordinary pivot-joint to connect the scissors with the handles, and is the only joint in the legs (besides the central pivots used when the scissors are straight, next comes the hinge-joint, by which the scissors are bent at the required angle to the angles on either side. Then between the pivot-joint and the handles is inserted a rotatory joint, for when the scissors are bent at an angle, and opened rather widely, there is a strain on the hinge-jonit that is not altogether compensated by the pivot-joint, but the rotatory-joint enables the legs of the small scissors to open with greater ease and without any strain." After explaining this mechanism more fully, the writer adds: "One of the blades is prolonged into a director-point in front of the other which has a blunt (*sic*, sharp in this sample) end.

The advantage of the director-point is this: in using ordinary scissors by the touch the finger has to guide and guard two separate points, a proceeding that requires very great care, and even the adjacent parts may be wounded, an accident that might also happen should the necessity arise of dividing a rigid os uteri over a presenting scalp; but with the director-point, which is made flat to facilitate its introduction under any edge of tissue, one blade is easily passed, and when its position is determined, then the other blade may be opened without any rick. Inasmuch as the scissors may be bent on either side they will be found useful in dividing the cervix uteri in any position both on the right and the left side." See notes on next instrument, No. 311B.

Frederic Durham, Esq., and Dr. H. A. Durham, 1918.

311B. **Heywood Smith's Angular Uterine Scissors (Curved).**

Total length, measured by curve of blade, 9½in. (24 cm.); length of handle from bows to screw-lock 6 in. (15.2 cm.); from screw to rotatory joint 1¾ in. (4.4 cm.); from rotatory joint to point of scissors 2 in. (5 cm.). "Mayer and Meltzer, London."

See notes to 311A. In the report on this instrument in the *Lancet,* vol. i, 1872, p. 583, it is observed that "in the pair with curved blades (made since the meeting of the Obstetrical Society) the points may be made to cut in a direction exactly opposite to and parallel with the handles." This report is dated April 27th, 1872. The meeting of the Society where the angular scissors were exhibited was held on March 6th, but this curved scissors, as well as the other, is figured in the *Trans. Obstet. Soc.,* vol. xiv, p. 69, the woodcut being added when the volume was published in 1873.

Both blades, curved on the flat, are very blunt at the free end.

These scissors and No. 311A were the property of Mr. Arthur Durham, Surgeon to Guy's Hospital. The blade, fellow to that which has a "director-point" in No. 311A, is made quite sharp, whilst the curved blades in this instrument appear much thicker and are more strongly curved than is Heywood Smith's original pattern. Durham freely used curved scissors in operations on the tongue and palate.

These two instruments differ from Nos. 310 and 311 in certain other respects, beyond the special modifications described above. The long shanks are super-imposed when closed, and are pivoted by a simple screw-joint, although there is a block about an inch forward towards the scissors. In Nos. 310 and 311 the long shanks are much more solid, their inner surfaces coming together when closed and they have a double block screw-joint.

(The nomenclature in the original reports quoted above is

somewhat confusing, but the mechanism is easily understood on inspection of the instruments. The scissors bear a half block screw-joint, below are the pair of hinge-joints, then the pair of rotatory-joints, and lastly the joint of the long shanks).

Frederic Durham, Esq., and Dr. H. A. Durham, 1918.

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312. **Bozeman's Double-Curved Uterine Scissors**

(*Blades turned to the Right.*)

Length, direct and not by the curves, $8\frac{1}{4}$ in. (21 cm.); tip of blade to lock $1\frac{3}{4}$ in. (4.4 cm.).

This instrument is sharply bent on its long axis $1\frac{1}{4}$ in. (3.17 cm.) above the rings or bows, up to the point of flexure the shanks are straight, beyond it they make a wide curve up to the lock, a screw or scissor-joint with a shank-block, where the blades make a sharper curve in the opposite direction. The points are sharp.

Constructed for paring the edges of fistulæ, vesico-vaginal, vesico-uterine, etc., high up in the genital tract. This instrument was made for the right side, with the blades curved to the left. A similar pair was constructed for the left, the blades being curved in the opposite direction. Both were to be held in the right hand. Bozeman exhibited his instruments for the operations for atresia vaginæ and vesico-vaginal fistula at a meeting of the Obstetrical Society of London in April 1877 (*Trans. Obstet. Soc.,* vol. xix, p. 96). The best description of Bozeman's method of operating for vesico-vaginal fistulæ is Bandl's, translated from an Austrian paper by Bozeman himself in an essay entitled, "Kolpekleisis as a means of treating Vesico-Vaginal Fistule (*sic*): Is the procedure ever necessary?" Philadelphia, 1877, p. 58. "He (Bozeman) uses two pairs of scissors to be employed to the right and left respectively; they serve principally the purpose of forming the angles." See also *Trans. Amer. Med. Assoc.,* vol. xxviii, 1877, p. 333, where, however, there is no special mention of the scissors. In the surgical instrument trade the "right" scissors are those of which the point turns to the right when the instrument is laid on the table with the head of the screw in the lock uppermost, the fellow scissors pointing to the left under similar conditions, but some gynæcologists, it appears, adopt an opposite nomenclature.

Royal Society of Medicine.

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313. **Uvula Scissors used for Uterine Polypi.**

Length $8\frac{1}{4}$ in. (21 cm.); from extremity to lock $2\frac{1}{2}$ in. (6.35 cm.). (6.35 cm.). "Matthews."

A powerful pair of scissors with blades curved on the flat above the lock. Screw-joint with block on handle side. The free end of

each blade, slightly broadened, turns inwards and downwards, so that when the blades close they cross each other X-ways, and their blunt outer surfaces cannot damage tissues beyond the parts divided.

There is no mention of this instrument in the Cat. Obstet. Soc., 1866. It is a uvula scissors, often also used for removing tonsils, which was employed by the donor, whose name has not been preserved, for dividing the pedicles of uterine polypi.

Royal Society of Medicine.

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314. **Martin's or Récamier-Roux's Curette.**

11 in. (28 cm.) long; longer blade $2\frac{1}{2}$ in. (6.3 cm.) long, shorter 2 in. (5 cm.). "Coxeter, London."

A steel instrument with the stem flattened and widened in the middle, so that it may be grasped firmly. There is a blade at each end, blunt-edged and forming a long narrow spoon as in Récamier's original design. In this sample each blade turns up rather sharply at the free end; its concavity is on the opposite side to that of its fellow on the other end of the stem. *Royal Society of Medicine.*

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315. **Marion Sims' Uterine Curette.**

Length 10 in. (25.4 cm.); the blade 1 in. (2.5 cm.); the stem $5\frac{1}{2}$ in. (14 cm.) long. "Krohne and Sesemann, London."

A steel instrument with handle, stem, and blade all in a straight line. The blade is fenestrated, and so is the handle. This sample strongly resembles the instrument sold at present (1921) as "Sims' curette," it was presented to the Obstetrical Society, about 1880, donor unknown, but probably Sims himself. Originally the handle was made of malleable metal so that it might be bent laterally backwards or forwards (Sims, "Clinical Notes on Uterine Surgery," 1866, p. 61), later it was modified and made of steel (Gill Wylie, in Mann's "System of Gynæcology," vol. i, 1887, p. 418, fig. 173, indexed under 'Curette' as "Sims' *latest* form of"). Emmet ("Principles and Practice of Gynæcology," 1880, p. 504) writes: "Dr. Sims' scraper has too sharp a cutting edge, and causes much bleeding." Many curettes described and sold as "Sims'" deviate considerably from the original type, but the fenestrated blade is the principal feature in all. In this sample it is very sharp-edged.

Royal Society of Medicine.

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316. **Spanton's Angular Curette.**

Length $11\frac{1}{4}$ in. (28.125 cm.); metal stem $6\frac{1}{2}$ in. (16.5 cm.); blade 1 in. (2.5 cm.) long, $\frac{1}{4}$ in. (0.6 cm.) at its broadest part.

"Medical Supply."

This instrument is a modification of Sims' original type. It is bent like a sound for $2\frac{1}{2}$ in. (6.3 cm.) at its free end, and bears a prominent rim at the point corresponding to the elbow in a sound. The blade or scraping portion is narrow and fenestrated, the bordering metal very thin and about $\frac{1}{4}$ in. (0.6 cm.) deep, as in many curettes now (1914) in use. The stem is mounted on an ebony handle, four-sided and chequered in front and behind.

W. Dunnett Spanton, Esq., 1914.

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317. **Braun's Intra-uterine Syringe (I).**

Weight 1 oz. (28.3 grms.); length, not along bend, $10\frac{3}{4}$ in. (27.3 cm.); the cannula beyond the bend is 3 in. (7.6 cm.) in length.

A German silver syringe, this sample being very well made, with a solid piston.

The essential part of this instrument is the long metal cannula with a smooth, olive-shaped dilatation at its extremity. It bears three minute perforations, at one inch (2.5 cm.) distance from each other, the highest being within a quarter of an inch of the extremity which is closed. The cannula has a screw-thread cut on its surface to allow wool to be wound around it, as in Playfair's probe. The piston-rod is marked with a scale in minims; it ends below in a ring for the thumb, whilst the lower end of the cylinder is broadened for the operator's fore and middle finger.

Professor Braun, Ritter von Fernwald, laid great stress on the necessary precautions when fluids, especially caustics, are injected into the uterine cavity. The olivary extremity allowed the operator to know when the fundus was reached, then the cannula was withdrawn a little and the injection thrown up, the scale on the piston-rod indicating the amount injected. Wool soaked in a neutralizing solution was afterwards wound round the cannula which was introduced a second time into the uterus.

See Braun von Fernwald, "Lehrbuch der gesammten Gynækologie," 1881, pp. 386, 387. *Royal Society of Medicine.*

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318. **Braun's Intra-uterine Syringe (II).**

A similar instrument disarticulated.

Royal Society of Medicine.

318A. **Womb-Sucker.**

Cylinder $6\frac{1}{2}$ in. 16.5 cm.) long; diam. $1\frac{5}{8}$ in. (4.12 cm.); nozzle $2\frac{1}{4}$ in. (5.7 cm.).

This instrument was exhibited at the Obstetrical Society's Conversazione, March 1866, and thus described in the Cat. Obstet. Soc., p. 220.

"The Womb Sucker (Der Gebärmuttersauger, Tuyau d'aspiration pour la matrice) of Dr. Charles Hennig, 1862, was exhibited by the author. This syringe is constructed 1st for sucking the tough phlegm (*sic*) out of the canal of the cervix uteri when affected with leucorrhœa, in order to clear the mucous membrane of the cervix before using stringent (*sic*) drugs, and to lessen the size of the cervix when dilated; 2nd, for sucking blood from the os uteri after scarifying it—a sort of artificial leech." According to this account there were several vulcanized india-rubber tubes, corresponding "to one of the different sizes of the portio-vaginalis," and also a glass tube "suited for appliance *in a speculum,*" but only one of these tubes or nozzles has been preserved, and it it is screwed on to the cylinder of the syring. *Royal Society of Medicine.*

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319. **Davis' Wooden Syringe.**

(*For silver nitrate injections.*)

Cylinder, length 6 in. (15.2 cm.); nozzle $\frac{1}{2}$ in. (1.27 cm.); diameter of cylinder $1\frac{1}{4}$ in. (3.17 cm.); length of metal tube 9 in. (22.8 cm.).

Syringe with cylinder and piston made of ebony. A long copper tube of small diameter, bearing perforations on one side close to the extremity, is constructed so as to screw on to the nozzle. It is turned slightly upwards at its extremity, and bears above the screw a metal cross-bar $1\frac{1}{2}$ inch (3.8 cm.) long to indicate the position of the opposite end when introduced into the uterine cavity.

Preserved in the Museum of the Obstetrical Society, with label 'Davis' Wooden Syringe for Silver Nitrate Solution."

Royal Society of Medicine.

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320. **Vaginal Syringe: Old Type.**

Cylinder, length 8 in. (20.3 cm.); diameter uniform throughout, in. (1.5 cm.).

A pewter cylinder of uniform diameter with no nozzle; it is convex at its extremity where it bears five perforations, one of which is central. The piston is worked by a simple ring; it is entirely made of pewter, like the cylinder.

Presented to the Obstetrical Society of London, donor's name and date not preserved. *Royal Society of Medicine.*

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321. **Hamilton's Vaginal Syringe.**

Cylinder, length 5 in. (12.7 cm.); nozzle $3\frac{1}{2}$ in. (8.87 cm.); diameter, almost uniform throughout, $\frac{3}{4}$ in. (2 cm.).

This syringe is made entirely of pewter. The nozzle, bent on the cylinder at a very obtuse angle, is uniformly cylindrical, closing

in at its upper extremity which bears a central and four lateral apertures.

A very antiquated type of vaginal syringe, which usually bears the names of Alexander and James Hamilton of Edinburgh.

Royal Society of Medicine.

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322. **J. Henry Bennet's Combined Scarifier and Caustic and Sponge Holder.**

The three instruments are fitted into a hollow vulcanite holder, after the fashion of fountain pens or combined pen and pencil holders. They can be turned into the interior of the holder and screwed down so as to be portable. John Henry Bennet (1816—1891) was the chief English advocate of the local treatment of the uterus for inflammation and so-called "ulceration" by caustics and cautery, a practice widely in use in the middle of the nineteenth century. See Obituary Notice of J. Henry Bennet, Esq., by J. Watt Black, *Trans. Obst. Soc.*, vol. xxxiv. (1892), pp. 40–43. These instruments were sometimes fitted into the plug of Bennet's speculum (No. 280). *Royal Society of Medicine.*

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323. **J. Henry Bennet's Caustic and Sponge Holders.**

Caustic holders (i) 9 in. (22.8 cm.) long, the handle being 7 in. (17.7 cm.) long); sponge holder (ii) $9\frac{1}{2}$ in. (24.1 cm.) long, handle being 7 in. (17.7 cm.).

These instruments, presented to the Obstetrical Society by the designer, are mounted on black wooden handles. The caustic holder is imperfect, the metal protecting cap only being preserved. The sponge holder is of a type still (1921) in use; three prongs, made by the splitting of a silver tube and incurved at their free ends, are closed when the sponge is applied to them by the pushing up of a metallic ring. *Royal Society of Medicine.*

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324. **Silver Caustic Holder.**

About $10\frac{1}{2}$ in. (26.6 cm.) long, to the point of the cone of nitrate of silver. "W. Matthews: Portugal Street, London."

A silver caustic holder of somewhat old-fashioned design, consisting of a tube $4\frac{1}{2}$ in. (11.4 cm.) long and $\frac{1}{4}$ in. (0.6 cm.) diameter, a tube of lesser calibre, but about the same length, fixed into it, and the usual metal cap on which the caustic is mounted.

No note about this instrument is preserved.

The caustic holder was in use long before the nineteenth century. Perret in his "Art du Coutelier," Paris, 1772, p. 285, describes a *porte-pierre infernale,* and figures it, Pl. lxxxvi, Figs. 38 to 41. The caustic was held by a *porte-crayon* made of silver, with an ebony sheath and cap. *Royal Society of Medicine.*

325. C. H. F. Routh's Caustic Holder and Dilator.

Length 11 in. (28 cm.), inclusive of 2 in. (5 cm.) of the handles bent down at a right angle to the upper part of the shanks; extremity to handles $3\frac{1}{4}$ in. (8.2 cm.); the caustic holding portion $\frac{3}{4}$ in. (2 cm.). "Coxeter, London."

According to the "Cat. Obstet. Soc.," 1866, p. 16, in reference to the exhibition of instruments that year, "Dr. C. H. F. Routh sent his *Instrument for introducing Caustic in Utero or for dilating the Internal Os,* manufactured by Coxeter. This instrument (which is figured *loc. cit.*, fig. 12) consists of four parts, two blades, a piston (lost), and a screw. The blades are kept together as scissors by a central pin [a Charrière or Péan's joint, rarely seen in 1866]. The upper portion is curved like a Simpson's sound, the extreme end, about one inch long being grooved so as to receive a small thin stick of caustic about one line thick. Between these two blades is a piston which fits into this groove, the handle of which (piston) slips up and down in two eyes or staples in one of the handles. [This "piston" is figured, *loc. cit.*, as a thin bar of steel, with a broad pin-like head called by the confusing name "handle" in the above quotation. The inner side of one handle bears an "eye" (not two) about one inch (2.5 cm.) above the bend, and higher up bears a deep groove which passes through the lock, on one side of the pin, and along the blade up into the groove at the extremity of the blade.] By pressing the end of the piston, or drawing it downwards, it is made to work in the groove." By pushing the piston forwards, the caustic remains in the uterus, and by means of the screw at the bend of the handles, the blades are made to open at the uterine end, so as to dilate the internal os. The handles are bent down above the bows, in order that the operator's hand may be kept out of the way of the orifice of the speculum.

This sample, which did not belong to the Museum of the Obstetrical Society, is, with the modifications above noted, almost identical with the instrument figured in illustration of the above quotation. *Penrose Williams, Esq.*, 1912.

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326. Uterine Scarificator.

Length 9in. (22.8 cm.). Inventor and maker unknown.

A brass tube $\frac{3}{8}$ in. (0.9 cm.) in diameter; the upper $1\frac{1}{4}$ in. (3.17 cm.) is a wider cylinder $\frac{5}{8}$ in. (1.5 cm.) in diameter, concealing 3 prismatic lancet-pointed knives; by pressing a piston at the lower end of the tube, the knives can be made to project half an inch (1.27 cm.) beyond the cylinder at the upper end.

The cylinder was placed against the cervix, and the piston pressed so that the knives punctured the uterine tissues. The objections to such a contrivance which makes wounds out of the

operator's sight, are obvious, and the instrument is difficult to clean. Many such scarifiers were designed in the middle of the 19th century when local depletion for "congestion of the womb" was freely practised. Leeching first dropped out of favour, cupping also proved unsatisfactory, and then instruments of this type came into use, to be replaced by the simpler scarifying knives on long handles, which allowed the operator a full view of the surface of the cervix as he made each puncture. *Penrose Williams, Esq.*, 1912.

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327. **Aluminium Playfair's Probe.**

Marked on the wooden handle "Gemrig," a Philadelphian instrument maker, the Reeves-Schlotterbeck bivalve speculum (No. 278) is also of his manufacture.

Length 12 in. (30.5 cm.), the handle being $3\frac{1}{2}$ in. (8.8 cm.).

A stout aluminium wire, roughened for 1 in. (2.5 cm.) below its blunt extremity to bear a piece of absorbent wool twisted on it, as in an ordinary Playfair's probe. Its lower end fits into a brass cap on the wooden handle and is fixed in by means of a screw. It could be used for the application of fused caustics, etc.

Royal Society of Medicine.

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328. **Female Bladder Sound** (*circ.* A.D. 1800).

Old Cat. H. 14.

7 in. (17.7 cm.) long; handle 2 in. (5 cm.) long; diameter $\frac{1}{4}$ in. (0.6 cm.). "Pepys."

A stout stem of nickel-plated steel, cylindrical, of uniform diameter and perfectly straight. The handle is bent downwards, smooth, thick and triangular, and $\frac{3}{4}$ in. (2 cm.) broad at the base or free end.

A very old form of sound, presented many years ago to the Museum of the College of Surgeons, donor's name not recorded. The firm of the maker, Pepys, was dissolved early in the nineteenth century. *Donor unknown.*

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329. **"Maw's" Urethral Dilator.**

Length 7 in. (17.7 cm.). "S. Maw, Son & Thompson."

This instrument consists of two bars of steel, nickel-plated, lying parallel when closed, the inner surfaces meeting in close apposition throughout. The upper end is blunt, the points of the two blades being about $\frac{1}{8}$ in. (0.3 cm.) broad when they touch. The screw-joint lies half-an-inch (1.2 cm.) above the lower end of the blades. Between the joint and the end the blades are transfixed by a screw. On working the thumb-piece of the screw the free upper ends of the blades part, so as to effect dilatation. The

blades are made broad, $3\frac{1}{2}$ in. (8.8 cm.) below the free ends, narrowing again towards the lower ends.

An instrument of the glove stretcher type, much resembling Graily Hewitt's Uterine Dilator (No. 244). It is not mentioned in that authority's "Diseases of Women"; it has been ascribed by dealers to Simpson, but neither Sir J. Y. or Sir A. R. Simpson ever devised or used a dilator of this type. It is figured in Messrs. Maw's "Book of Illustrations," 1870, as a "Female Urethra Dilator." Fergusson used Weiss' two-bladed dilator; see note to 90. 337.

Instruments of this type fell into disuse when Simon's dilator and digital dilatation were introduced and found more satisfactory.

For "Weiss's" Urethral Dilator see description of (No. 267) Weiss's Speculum or Dilator, and (No. 337) "Case containing Vaginal Urethral and Rectal Specula, *circ.* 1840," which includes a urethral dilator of that type.

Messrs. Maw, Son and Sons, 1914.

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330. **Kelly's Cystoscope.**

Length 7 in. (17.7 cm.); diameter at upper end $\frac{3}{16}$ in. (4.7 mil.). Diameter of funnel at lower end 1 in. (2.5 cm.).

A steel instrument, nickel-plated. It is a metal tube, open at its upper end, where it is slightly contracted, and expanded into a funnel at its lower end, the inner surface of which is blackened. It is furnished with a plug, of the same metal, on a stem which bears a ring at its opposite end. The speculum is introduced into the urethra plugged. Then by pulling on the ring the plug is removed and the bladder inspected.

This sample is a form, modified by some dealer, of Kelly's speculum or cystoscope. In the later type a long firm handle, directed obliquely downwards, was fixed below the funnel, and the stem bore a thumbpiece in place of a ring. See Kelly and Noble, "Gynæcology and Abdominal Surgery," 1907, Vol. i, Fig. 239, representing "the type of Kelly Speculum now most used." Its inventor claimed that it was simple and required no more complicated light than that of the sun or a tallow candle. The most complicated feature of the method is the necessity of using a head mirror, but if that be dispensed with the direct head light may be used, which entails the necessity for expensive electric apparatus (*loc. cit.*, p. 444). Kelly never used a cystoscope without a handle, all those that he himself designed had handles attached to the funnels from the first, but in the earliest models the handle was found to be much too short, only offering a grasp for the thumb and finger. (*Private correspondence with Dr. Kelly.*)

Dr. Amand Routh, 1914.

331. **Suture-Holder for Operations on Vesico-Vaginal Fistula.**
12 in. (30.5 cm.) long; shank $8\frac{1}{2}$ in. (21.5 cm.).
"Coxeter, London."

The shank, slightly curved towards its free end, terminates in a hook made to seize a loop of suture, the rod being retracted by pressure of the thumb on the metal button close to the handle. The rod, bearing a spring, flies up when the pressure on the button is relaxed, and its point enters a small hole in the hook. The loop, thus secured against slipping, can then be pulled down.

This instrument resembles a smaller one, now obsolete, used for operations on cleft palate.

For scissors used in operations for vesico-vaginal fistula, etc., see No. 312. *Royal Society of Medicine.*

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332. **Lazarewitch's Female Catheter.**
Length 6 in. (15.24 cm.), making allowance for small piece broken off at free end.

A vulcanite instrument resembling the same authority's vulcanite uterine sounds and dilators (Nos. 236, 291 and 292). The perforations near the extremity are very minute. There is the usual projection close to the lower end, for the operator's finger and thumb.

Preserved, without a label, with the other vulcanite instruments presented by Dr. Lazarewitch, to the Museum of the Obstetrical Society of London. *Royal Society of Medicine.*

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333. **Female Catheter (I).**
(Old Cat., H. 12.)
Silver $5\frac{1}{2}$ in. (14 cm.).

Curve slight, large calibre, flattened. Near the closed end is an eye on the front aspect, and a row of 6 small perforations on each side. A ring lies on each side, close to the lower end.
Benjamin Barrow, Esq., 1871.

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334. **Female Catheter (II).**
(Old Cat., H. 11.)
Silver $5\frac{1}{2}$ in. (14 cm.).

Curve slight, small calibre, not flattened, no eye. Close to the closed upper end are three parallel rows of 6 perforations, one row on each side and the third in front, extending $\frac{3}{4}$ in. (2 cm.) downwards. A flat projecting piece of metal close to the lower end indicates the anterior part of the catheter.

An old instrument, date not recorded. The parallel perforations

resemble, to a certain extent, those in the next instrument, No. 335, presented in 1818.

Cf. Savigny, "Instruments," 1798, Pl. v, fig. 131 (flattened) and Brambilla, "Instrumentarium Chirurgicum Militare" (1782), Pl. xxx, fig. 16 (5 perforations). *John Birket, Esq.*, 1870.

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335. **Female Catheter (III).**

(1818.)

(Old Cat. H. 9.)

Silver. Length $5\frac{3}{4}$ in. (14.6 cm.), not including ring of stilet.

Curve slight. Flattened laterally and antero-posteriorly, so as to be four-sided. Close to the closed upper end are two parallel rows of six perforations, one row on each side, and a third row of the same number in front, coming down a little lower. Projecting metal indicator close to lower end on front aspect. Stilet with ring, as in later types.

A very old instrument, preserved for over a century in the Museum of the College; it belonged to William Long, Master of the College of Surgeons in 1800, and was presented by his widow.

Mrs. Long, 1818.

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336. **Female Catheter with Injecting Funnel.**

(Old Cat. H. 10.

Silver, curve moderate. Length, funnel included, 9in. (22.8cm.).

End closed. A long slit on the front and also on the back $\frac{1}{4}$ in. (0.6 cm.) below the end, and a similar slit $1\frac{1}{2}$ in. (2.8 cm.) below the end, on each side of the catheter. The funnel is 1 in. (2.5 cm.) long and $\frac{1}{2}$ in. (1.2 cm.) in diameter at its orifice, its long axis is in a line with that of the catheter.

Like female catheter No. 335 this instrument has been in the possession of the College for a century.

Like No. 335, this was once the property of William Long, Master of the College. *Mrs. Long*, 1818.

336A. **Sims' Sigmoid Female Catheter.**

Length, not measured along curves, 5 in. (12.7 cm.). Calibre No. 11 English Catheter scale.

A silver catheter bent into two curves, the curve on the vesical being wider than that on the urethral and extreme portion. Upper extremity open; orifice about $^1/_{10}$ in. (0.25 cm.) in diameter with edges rounded and smooth. On the upper and under surfaces, beginning one-quarter of an inch below the upper extremity, are four large circular holes together occupying a space of about an

inch. On each side, beginning about half an inch below the extremity, are three holes together occupying a space of about half an inch. These holes are larger than that at the extremity, and each hole faces the corresponding orifice on the opposite side. The lower extremity is everted, forming a rim, unusual in this type of catheter. Half an inch below the rim there is, in this sample, an irregular circular groove, most probably filed into the catheter for the attachment of a wire thread to aid in its retention. A similar groove is seen in an identical sample placed in the Lister Collection in this Museum.

For the origin of Sims' Sigmoid Catheter see "On the Treatment of Vesico-Vaginal Fistula, by J. Marion Sims, M.D., of Montgomery, Alabama," *Amer. Journ. Med. Sciences,* New Series, vol. xxiii, 1852, p. 78. Sims' aim was to make a self-retaining catheter for application after operations for vesico-vaginal fistula. "Almost every case may require its own catheter, peculiar in length, diameter, and curvature." The big round holes pierced in the wall of the catheter, as far as possible from the urethra, and the small hole, with well-finished edges, at the extremity, were designed mainly for two objects. They allow of the free escape of urine into the canal of the catheter. They bear no long oval fenestræ. Sims found that folds of mucous membrane tend to project freely into orifices of that shape, and since irritation of the bladder is the necessary consequence, granulations develop and grow into the fenestræ, forming button-shaped knobs in the canal of the instrument. Consequently its removal will probably break down the parts united by operation and certainly cause the patient much pain. The upper end lies behind the symphysis with its concavity upwards and forwards, the middle part lies in the urethra and the lower end hangs down immediately below the meatus, with the concavity backwards. When well-fitted "it is perfectly self-retaining, being held in the bladder by an internal pressure against the symphysis pubis, and by an external pressure on the outer end exerted by the labia overlapping it."

This instrument belonged to Lord Lister and, as in pattern it is somewhat old-fashioned, it was possibly left to him by Mr. Syme.

Lord Lister's Executors, 1912.

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337. **Case Containing Vaginal, Urethral, and Rectal Specula.**
(*Cir.* 1840.)

A mahogany box, bearing on a silver plate fixed to the lid, the name "H. W. Bailey." It was exhibited at the Conversazione of the Obstetrical Society in 1866 by Mr. Henry Woodruffe Bailey, of Thetford, Norfolk, who presented it to the Society. It contains:

(1) A Weiss' 3-bladed steel dilating vaginal speculum, Scultetus' type (see No. 267), with chequered ivory handle fitted with a wooden plug obturator. It is also suitable for rectal exploration. Blades 4 in. (10.16 cm.) long, lower blade about $\frac{1}{2}$ in. (1.27 cm.) broad at free end and $\frac{3}{4}$ in. (2 cm.) at handle end, whilst the lateral blades are slightly narrower. Handle and screw apparatus $6\frac{3}{4}$ in. (17.1 cm.). Handle alone $3\frac{1}{2}$ in. (8.9 cm.). Figured in David Davis's Atlas to "Principles and Practice of Obstetric Medicine," Pl. xiB, fig. 3, as "a good representation of a speculum matricis. It is the instrument most frequently used at present (1836) in London practice. The part to be introduced, embraces a staff finished at one end by a rounded termination, by which it is easily conducted along into contact with the os tincæ. By screwing the handle of the instrument, the staff is set at liberty, and easily withdrawn, and the part introduced into the vagina greatly expanded, so as to leave a widish tube, through which the eye may be made use of, to examine the os internum and the mucous membrane of the passage with great advantage."

(2) Weiss' 3-bladed female urethral dilator with chequered ivory handle and wood plug.

Blades $2\frac{1}{2}$ in. (6.3 cm.) long; about $\frac{1}{8}$ in. (0.3 cm.) broad at free end and $\frac{1}{4}$ in. (0.6 cm.) at handle end. Handle and screw apparatus $4\frac{1}{2}$ in. (0.6 cm.). Handle alone $2\frac{1}{2}$ in. (6.3 cm.). (See No. 267.) Fergusson recommends "one of Weiss' 2-bladed instruments" for dilatation in cases of calculus ("System of Surgery," 5th ed., 1870, p. 720).

(3) Bodenhammer's 2-bladed steel dilating rectal speculum (screw for fixing handle missing).

Length of blades 4 in. (10.1 cm.). Vertical diameter of free end of closed blades $\frac{1}{2}$ in. (1.27 cm.), transverse about $\frac{1}{4}$ in. (0.6 cm.). Length of handles 6 in. (15.2 cm.).

(4) Two Horn's tubular metal vaginal specula (medium size missing). See No. 282.

(5) One glass leech-tube (in great demand even later than the middle of the nineteenth century).

(6) A cut-glass bottle for oil.

Royal Society of Medicine.

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338. **Case of Obstetric Instruments.**

(*City of London Lying-in Hospital.*)

This case contained a Conquest's forceps (No. 16 in this collection), a Conquest's craniotomy forceps (No. 95) and an ovum forceps or other obstetrical instrument, missing, and now holds a vectis (with holes beneath the fenestra for tapes), a perforator after

Denman, and a sharp and blunt hook on the same stem (10 in. or 25.4 cm. long), which is bulbous at the mid-point between the hooks so that it may be conveniently grasped.

Vectis—Weight 6½ oz. (177 grms.); length 11½ in. (29.2 cm.); length of blades 8 in. (20.3 cm.); greatest breadth (at free end) 1¾ in. (4.4 cm.); length of fenestra 4½ in. (11.4 cm.). A strong instrument with the blade moderately curved, broad and straight at the free end, where the corners are rounded, and perforated by two holes below the fenestra which is very long an broad towards the end. Shank of blade long and cylindrical. The handle is made of wood,

Denman's Perforator.—Length 9 in. (22.8 cm.); tip of blade to lock 3 in. (7.6 cm); cutting blades from tip to shoulder 1 in. (2.5 cm.). Similar to No. 74, the handles projecting outwards only, so that the shanks are almost parallel (compare No. 75), but the inner surfaces of the blades are not roughened near the tip.

Presented to the Obstetrical Society of London. "City of London Lying-in Hospital, City Road, London, E.C., 27th May, 1885. Dear Sir: I have been directed by the Committee of Management to forward you the accompanying case of old instruments for the Museum of the Obstetrical Society, they are probably over a century old.—Yours faithfully, R. A. Outhwaite, Secretary.—The Secretary, Obstetrical Society, 54, Berners Street."

The forceps and craniotomy forceps were certainly in use before 1820, when they were described by Conquest. See notes to Nos. 16, 94, and 95. The craniotomy forceps were avowedly constructed "after" David Davis's similar instrument. The vectis may be compared with the old types of that instrument, Nos. 57, 58, 59, and 60 in this collection. It is doubtful if the set of forceps, etc., in this case be older than about the year 1810.

Royal Society of Medicine.

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339. **Hull's Abdominal Support.**

(*Toulmin's modification.*)

"S. Maw & Son."

Abdominal pad 8 in. (20.3 cm.), horizontal, by 6 in. (15.2 cm.) vertical measurement; extra abdominal pad 6 in. (15.2 cm.) by 4¼ in. (10.7 cm.). Circular pad 3½ in. (8.9 cm.) diameter.

The round pad rests on the lower part of the spine immediately above the sacrum, the half-spring thus passing round just below the crest of the ilium. The padded band is prolonged beyond the spring and terminates in two leather straps made to fasten into two buttons on the pad in order to keep it steady. When pressure is made, the strap does not cut into the hip. The abdominal pad is made like a broad band supporting the weakened or pendulous

abdominal walls. In cases of ventral hernia a little pad is fitted in the small circle in the centre of the abdominal pad. The spring has counter-sunk holes to enable the pad to be fixed in the desired position.

The additional pad, smaller than the abdominal pad, but of the same shape and also bearing buttons for the two straps, may be used when suitable.

According to the Cat. Obstet. Soc., 1866, p. 5, " The Abdominal Belt for use after Delivery invented by Dr. Toulmin, was exhibited by Maw & Son, London. The abdominal pad is attached to a circular spring and constitutes an easily applied and effectual support." It bore a ticket "Abdominal Truss for Application after delivery, invented by Francis Toulmin, Esq., makers S. Maw & Son."

This truss is practically that known as Hull's abdominal support, on sale before 1860. Toulmin simply added the additional pad. Similar contrivances, such as Howell and Curtis's abdominal supports, are still in use. *Royal Society of Medicine.*

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340. **Invalid's Glass.**

A stout glass cup 4 in. (10.16 cm.) high, capable of holding a little under 160 cubic centimetres, or over four and a half ounces of fluid without overflowing when held obliquely. It turns in at the brim, which is $3\frac{1}{4}$ in. (8.2 cm.) in circumference, so that the mouth of the glass is covered over by a shallow funnel which bears in the middle an orifice one in. (2.5 cm.) in diameter, to admit the fluid. Another and smaller orifice is cut in the brim, and through this orifice the patient can drink the fluid, without any of it flowing over the brim on to the counterpane. " Mr. Cooper exhibited . . . an *Invalid's Glass* for administering fluids while the patient is in a recumbent position," Cat. Obstet. Soc., 1866, p. 136.

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341. **Martin's Breast Pump.**

" G. Jolley, Mayfair."

(1) Brass pump or syringe with cylinder $2\frac{3}{4}$ in. (7 cm.) in length and $\frac{5}{8}$ in. (1.5 cm.) in diameter.

(2) A glass cap $2\frac{3}{4}$ in. (7 cm.) in diameter, proceeding from a cylinder 1 in. (2.5 cm.) in diameter and 2 in. (5 cm.) long, connected with the receptacle which stands out from it at right anples and is elongated, measuring 5 in. (12.7 cm.) in long diameter by $1\frac{3}{4}$ in. (4.4 cm.) at its broadest part. The receptacle holds 85 cc. (about 3 oz.) fluid. At the upper end of the cylinder is a brass tube,

bearing a cap made to cover an oilskin valve when the instrument is packed up. The pump or the tubing can be screwed on to the brass tube which bears a small hole stopped with a screw-nut, to admit air when necessary.

(3) A piece of flexible tubing about a foot (30.5 cm.) long covered with silk; it bears a brass piece made to screw on to the pump, and an ivory mouthpiece at its free end.

This instrument was brought out about 1850 by a Mr. Martin, manager, at the time, of Messrs. Soloman Maw's factory. The receptacle, spherical in older types, was elongated, so that it might be more easily grasped by the hand, whilst the bore was made larger and more cylindrical so that the nipple should not be hurt. As the pump sometimes caused pain, the tubing was introduced so that the mother might place the mouthpiece to her own lips. The pump is preferable when it is necessary to develop the nipple.

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342. **Maunsell's Abdominal Retractor (I).**

A pair of large steel wire retractors, joined by a spring. One has a swivel connecting it with the end of the spring, for portability, as its convexity may be rotated into the concavity of the other retractor (see No. 342A). The spring is a very stout steel bar, bent on itself and flattened at the bend, sugar-tongs fashion, each limb measuring 7 in. (17.7 cm.) in length. The limbs are connected by a transverse screw-rod with a check-nut.

This instrument was designed by Dr. Henry Widenham Maunsell (b 1847, d 1895), Lecturer on Surgery in the University of Otago, 1889—1892. He is chiefly remembered as an authority in the surgery of the intestines.

The Westminster Hospital Medical School, 1913.

342A. **Maunsell's Abdominal Retractor (II).**

A similar instrument closed for packing (see No. 342).

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343. **Blundell's Transfusion Apparatus.**

Packed in a large mahogany box: the name "Dr. Blundell" is engraved on a brass plate on the lid. The separate syringe bears the name "*Laundy*, Maker, *St. Thomas's Street*, Southward," an old firm, long dissolved.

These are Dr. Blundell's own instruments, described and figured in his "Researches, Physiological and Pathological," 1825, 7 *Med. Chir. Trans.*, vol. ix, pp. 56, 57, 68, with some modifications.

The box includes (1) the separate syringe; (2) the "Impellor";

(3) two flexible elastic gum tubes of about the calibre of a goose-quill, one a size larger than the other; (4) a shorter flexible tube which fits into the syringe; (5) two silver tubules, one a size larger than the other, for introduction into the veins. Each bears a brass wing $1\frac{1}{2}$ in. (3.8 cm.) wide at the upper end, where it fits on to the elastic gum tube "(3)" (*loc. cit.*, p. 119). Each tubule is curved slightly downwards, and, nearer the point, slightly upwards. The orifice is cut straight and its edges are quite blunt ("The orifice of the tubule should not have a cutting edge," *loc. cit.*, p. 122). Each tubule is over 3 in. (7.6 cm.) long, the stouter being slightly the shorter. (6) A silver tubule "for transfusion from arteries to veins direct," *loc. cit.*, Pl. ii, fig. 3, but not identical, as Blundell represents the tubule with a rim at its upper end. (7) A double-edged scalpol in a tortoise-shell case. (8) A lancet in a mother-of-pearl case. (9) A brass spanner for removing the syringe and brass pipe in the "impellor" so that they may be cleaned after use. (10) An ivory ring tourniquet 2 in. (5 cm.) in diameter. (11) Small alum leather "washers" $\frac{1}{4}$ in. (0.6 cm.) in diameter to form valves. (12) "Wire to form valve springs." Under the tray holding the needles is a space for the eyed probe, blunted needle, spring forceps and ligatures which Blundell carried in the case.

The "impellor" is minutely described, *loc. cit.*, Pl. iii and text. There is a tin funnel enamelled without and japanned within and about $6\frac{3}{4}$ in. (17.1 cm.) in diameter, forming the "outer cup" which was filled with water at 96°F. A tin "inner cup" fits into this funnel to receive the blood from the vein of the blood-giver, this inner cup opens below into a short spout which fits into the brass pipe underneath it. The funnel or "outer cup" ends below in a cylinder 3 in. (7.6 cm.) long, by $2\frac{1}{2}$ in. (6.3 cm.) in diameter. A solid steel bar runs down below the bottom of the cylinder. It is fitted to a vice, which was screwed on to a chair for the support of the "impellor." A brass tap protrudes from the side of the cylinder. A syringe with a very powerful piston-bar, bearing an ivory handle 3 in. (cm.) wide lies obliquely in the outer cup; the cylinder is relatively small. This syringe communicates with the brass pipe fitted to the "inner cup" above. The brass pipe opens into the tap outside the cylinder, and one of the flexible elastic gum tubes, bearing a metal tubule to be introduced into the patient's veins, is fitted on to the tap. The blood-giver's blood lying in the inner cup is drawn into the brass pipe, and on through a valve into the syringe when the piston is raised. Then, the piston being depressed, the blood is expelled through another valve out of the tap and thence into the patient's vein. The two valves in the brass pipe, "armed with two or three folds of soft alum leather," were unsatisfactory.

In this set of instruments the "inner cup" is marked from 2 to 8 ounces, and there is a second inner cup, not graduated. A half-cup is also present; it can be fitted on to the graduated inner cup when the blood is defibrinated, acting as a splash-board.

The separate syringe will hold 4 ounces (0.113 grms.), and its nozzle can be fitted on to the short flexible tube or directly on to one of the metal tubules. The giver's blood drawn out of a tumbler into the syringe, was injected into the patient's vein (but see Blundell, *loc. cit.*, p. 70). There is also, in the box, a funnel 4 inches (10.16 cm.) in diameter, made of copper, tinned within and opening into a short brass spout which can be fitted on to the short flexible tube, and a metal septum divides the opening in the funnel into two parts. There are two holes on the border of the funnel, evidently for the fitting on of a half-cup. This funnel, associated with later types of transfusion apparatus, is not mentioned in Blundell's treatise and was probably used with the separate syringe.

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344. **Belina's Transfusion Apparatus.**

"Messrs. Charrière, Collin et Cie, à Paris."

This instrument consists of a glass vessel shaped like an inverted flask 2 in. (2.8 cm.) long, and graduated "250 centicubes." The broader or upper end is saucer-shaped and closed, with a hole $\frac{3}{4}$ in. (2 cm.) drilled in its centre and fitted with a rubber cork. In the centre of the cork is placed an ivory mount, with a hole bored through it, covered over with a muslin valve. The lower end is tapering, and on to it is fitted a 4 inch (10.16 cm.) indiarubber tube, terminating in a $1\frac{1}{2}$ in. (3.8 cm.) steel trocar and cannula with a side branch. The trocar forms a stop-cock, so that when with drawn beyond the side branch it allows the blood to pass through the cannula into the vein. A felt cover, to maintain the temperature of the blood, invests the glass vessel.

A double action india-rubber air bellows (as for Richardson's spray) is added. It is made to be fitted to the ivory mount above named, and serves to increase atmospheric pressure on the surface of the fluid in the glass vessel, the gauze on the mount acting as a filter.

There are also three glass rods twisted spirally, 9 in. (22.8 cm.) long; the edges of the twists are made sharp. They were passed through the hole in the broad end of the flask, twisted about for defibrination of the blood, and then retracted, the rubber cork being inserted into the hole.

The whole is made to pack into a leather covered case.

This apparatus was described by its inventor, Dr. L. von Belina-Swiontkowski, in "Die Transfusion des Blutes in physiologischer und medicinischer Beziehung" (Heidelberg 1869). The absence of a piston is its main mechanical feature. Belina's original instrument (*loc. cit.*, p. 123, and fig. 19) had a single-hand-ball, which he afterwards replaced by the air bellows. He states that it was on the advice of Helmholtz that he substituted atmospheric for piston pressure.

In the Museum of the Obstetrical Society it bore a label: "Transfusion Apparatus (Belina), exhibited by Obstet. Soc. Lond."; it is not mentioned in the Cat. Obstet. Soc., 1866, which was published three years before Belina's monograph on Transfusion. *Royal Society of Medicine.*

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345. **Ferguson's Transfusion Apparatus.**

"Ferguson, 21, Giltspur St., London."

Syringe: cylinder $5\frac{1}{4}$ in. (13.3 cm.) long; diameter 1 in. (2.54 cm.); piston marked $\frac{1}{2}$ oz., $1\frac{1}{4}$ oz. and 2 oz.

The end of the syringe bears a two-way tap with a nozzle at right angles fitting into the funnel, another nozzle, in a line with the long axis of the cylinder, fits into the brass end of a 6 inch (15.2 cm.) rubber tube at the opposite end of which is a German silver tube to which the transfusion needle is fitted.

The funnel is 4 in. (16.16 cm.) in diameter, with an outer jacket 5 in. (12.7 cm.) in diameter. There is a hole in the circular plate joining the funnel and jacket at their free edges, into which hot water may be poured. A wire support crosses the funnel and bears a mount with which the thermometer marked from 40° to 100° F. is fitted.

The syringe, funnel, tubing, and needle are placed in hot water and then connected. The jacket is filled with hot water, the thermometer being fixed in the mount. The blood from the giver is poured into the funnel, the assistant then stirring it to prevent coagulation. The operator inserts the needle in the usual way, and the two-way tap is turned so as to make a communication between the funnel and the syringe. The handle of the piston is now drawn out to the required degree as indicated on the piston, thus filling the cylinder with the required amount of blood. The tap is then turned in the direction of the syringe and needle and the piston pushed slowly down, forcing the blood through the tubing and needle into the patient's vein.

The top of the cylinder bears a circular shoulder forming a finger ring, so that the piston can be worked with one hand, leaving the other free to steady the needle. The rubber tubing is

too short, and does not fit accurately into its place in the box. One transfusion needle is missing.

This instrument, apparently a modification of Collins' transfusing apparatus was made by Ferguson of Giltspur Street, E.C., about 1870, and used in the gynæcological ward in St. Bartholomew's Hospital, by G. Callender and others. It was found to be unnecessarily complicated, and was presented to the Obstetrical Society. *Royal Society of Medicine.*

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346. **Caselli's Transfusion Apparatus.**
(Direct Transfusion.)

Preserved in a cloth paper-covered case velvet-lined, with label "Fratelli Lollini: Bologna."

This apparatus consists of:—

(1) Two steel needles, hollow and sharp-pointed, each $1\frac{1}{2}$ in. (3.8 cm.) long and terminating in a flat narrow shield $1\frac{3}{4}$ in. (4.4 cm.) in transverse measurement, and fenestrated for lightness; beneath the shield is a bayonet-lock. One needle bears a grooved guard nearly an inch above its point, a cannula slides inside the needle and can be protruded beyond its point and then locked in the bayonet-joint; this arrangement is for the blood-giver. The other needle bears no guard, but a cannula fits into it, as on the other needle. This cannula has a side branch below the shield.

(2) Two blunt steel guides (one missing) with flattened ends for introduction into the hollow needles. They are made to lock into the bayonet-joint.

There is a vacant space in the blocking, apparently for a small glass flask for oil or other lubricating agent.

Described in full in "Considerazioni sulla transfusione del sangue e nuova cannula per eserguirla," by Azzio Caselli of Reggio-Emilia ("Bolletino delle Scienze mediche di Bologna"), Ser. V, Vol. for 18th year (1874), p. 344. Caselli directs that the steel needle with the guard be passed into the blood-giver's vein, one blunt steel guide being slipped into the canal for the needle as soon as its point has entered the lumen of the vein, so that the walls of the vein may not be wounded. By means of a ligature tied round the groove in the guard the needle is fixed so that it cannot slip out. The other steel needle is passed into the patient's vein, not dissected up but fairly exposed by a continuous incision about a centimetre long. The second steel guide is then inserted in the canal of the needle. The operator next takes up the two cannulæ, joined by the rubber tubing. The steel guide is removed from the needle in the giver's vein and the plain (or unbranched)

cannula slipped into the canal of the needle, as far as it will go, then its free end, which is blunt, will protrude in the lumen of the vein beyond the point of the needle. Then, if the needle and cannula lie properly in the vein, two jets of blood will issue from the branched cannula. The operator presses his finger on the orifice of the side branch, withdraws the steel guide from the needle in the patient's vein and slips into its lumen the straight main part of the branch cannula, the blood issuing from it running straight into the patient's circulation free from air-bubbles.

The two needles are packed with the cannulæ, connected by rubber tubing, inserted in their lumen.

(A transfusion apparatus, presented by Sir Erasmus Wilson, is preserved in Series L, No. 32.)

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347. **Graily Hewitt's Transfusion Apparatus.**

Glass springe, without piston and mountings, $4\frac{1}{2}$ in. (10.7 cm.); diameter $1\frac{1}{4}$ in. (3.17 cm.); cannula not measured by curve $1\frac{3}{4}$ in. (4.4 cm.); dissecting forceps $4\frac{3}{4}$ in. (12.1 cm.); scalpel case 4 in. (10.16 cm.); blade of scalpel $1\frac{7}{8}$ in. (4.75 cm.).

"Savigny and Co."

Fully described (and figured), Dr. Graily Hewitt's "Apparatus for the Performance of Transfusion," *Trans. Obstet. Soc.*, vol. vi (1864), p. 136. The blood to be transfused is directly received into the glass syringe, without any intermediate receptacle. For this purpose the piston is removed and the barrel of the syringe held in an inverted position over the orifice of the vein in close apposition with the surface of the skin, but not pressed too firmly, otherwise the blood will not flow. The blood thus rises into the syringe from the curved silver tube passed into the blood-giver's vein, and when a sufficient quantity is collected in the barrel the syringe is suddenly removed and the piston inserted, the blood being prevented from escaping by the metal plug placed into the orifice of the tube to which it is attached by a chain.

The patient's arm is prepared before the syringe is filled. The median basilic or median cephalic vein is dissected bare for about an inch by means of the scalpel, seized with forceps, and exposed obliquely and just enough to allow of the introduction of the cannula. The plug is then removed and the tube on the syringe fitted into the cannula. By gently depressing the piston the blood flows into the receiving vein.

This instrument is also figured, but very briefly described in the "Cat. Obstet. Soc.," 1866, p. 208. The handle of the piston

and the upper mounting of the syringe is made of wood, the piston, part of the plug and the lower mounting and its tube for insertion into the blood-giver's vein are all made of plated brass, while the cannula which bears a flat disk $\frac{1}{8}$ in. (1.5 cm.) at its upper end, is of white metal. It is shouldered, or rather infundibuliform, for half an inch (1.2 cm.) below the disk and flattened at its lower end (for the patient's vein) where its widest diameter is about that of a No. 4 catheter, English scale. Its stylet bears a bulb at the free end to plug the orifice of the cannula accurately before the syringe is fitted on to it. The dissecting forceps has a pin near the handle to prevent parting of the points when the blades are firmly pressed, the points are broad and cut square. The scalpel has a bowed edge, and is cased in ivory with a spring back. The extra cannula and the common lancet belonging to this apparatus have been lost. The syringe and scalpel are packed in a roll of leather.

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N.B.—For *Transfusion Apparatus* see 343 to 347, Gynæcological Series—Blundell's, Belina-Swionkowski's, Ferguson's and Casselli's apparatus.

L.C. = Loan Collection.

INSTRUMENTS FOR OPERATIONS ON UTERINE FIBRO-MYOMATA.

ECRASEURS, Etc., FOR TREATMENT OF UTERINE POLYPUS.

HYSTEROTOMES OR METROTOMES.

UTERINE DILATORS.

STEMS AND PESSARIES.

VAGINAL AND UTERINE DEPRESSORS, ELEVATORS AND REPOSITORS.

VAGINAL SPECULA.

L.C. = Loan Collection.

1. The classification of this group adopted in the Cat. Obst. Soc., 1866, has been modified, bivalves with superior inferior blades being separated from bivalves with lateral blades.

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